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CONTENTS OF VOLUME 16

ARTICLES

	PAGE
The Influence of the Horse in the Development of Plains Culture. CLARK WISSLER.....	1
The Boomerang in Ancient Babylonia. JAMES B. NIES.....	26
The Circular Kivas of Small Ruins in the San Juan Watershed. T. MITCHELL PRUDDEN. (Plates I-IX).....	33
Portraiture Among the North Pacific Coast Tribes. GEORGE T. EMMONS. (Plate X).....	39
Notes on the Plains Cree. ALANSON SKINNER.....	68
The Maya Zodiac of Acanceh. STANSBURY HAGAR. (Plate XI)....	88
Oglala Kinship Terms. JAMES R. WALKER.....	96
La Combe, a Paleolithic Cave in the Dordogne. GEORGE GRANT MACCURDY. (Plate XII).....	157
The Ruins of Espiritu Pampa, Peru. HIRAM BINGHAM. (Plate XIII).....	185
Prehistoric Objects from a Shell-heap at Erin Bay, Trinidad. J. WALTER FEWKES. (Plates XIV-XIX).....	200
A Piebald Family of White Americans. ALBERT ERNEST JENKS. (Plates XX-XXIV).....	221
Petroglyphs of St Vincent, British West Indies. THOMAS HUCK- ERBY. (Plates XXV-XXIX).....	238
The Cheyenne Medicine Lodge. GEORGE BIRD GRINNELL.....	245
Ten Days with Dr Henri Martin at La Quina. CHARLES PEABODY. (With a Note on the La Quina Skull, by E. A. Hooton).....	257
Tewa Kinship Terms from the Pueblo of Hano, Arizona. BARBARA FREIRE-MARRECO.....	269
Supernatural Beings of the Huron and Wyandot. C. M. BARBEAU	288
The Cultural Position of the Plains Ojibway. ALANSON SKINNER.	314
A Prehistoric Stone Collar from Porto Rico. J. WALTER FEWKES.	319
The Man of Piltdown. GEORGE GRANT MACCURDY. (Plate XXX)	331
In Memoriam: Alexander F. Chamberlain. ALBERT N. GILBERT- SON. (Plate XXXI).....	337
Primitive American History. JOHN R. SWANTON and ROLAND B. DIXON.....	376

Areas of American Culture Characterization Tentatively Outlined as an Aid in the Study of Antiquities. W. H. HOLMES. (Plate xxxii).....	413
Material Cultures of the North American Indians. CLARK WISSLER, (Plate xxxiii).....	447
Physical Anthropology in America. ALEŠ HRDLIČKA.....	508
The Present Condition of Our Knowledge of the North American Languages. PLINY EARLE GODDARD.....	555
Ceremonialism in North America. ROBERT H. LOWIE.....	602

DISCUSSION AND CORRESPONDENCE

Ancient Lodge Sites on the Missouri in Nebraska (Sterns), 135. The Red-paint People of Maine (Moore), 137. The Mother-in-law Taboo (Goldenweiser), 139. Arrow-chipping by Means of Fire and Water, 140. Adolph Francis Alphonse Bandelier (F. W. H.), 349. "The Red-paint People"—A Reply (Moorehead), 358. Two Alleged Algonquian Languages of California (Michelson), 361. International Congress of Americanists, 367.

ANTHROPOLOGIC MISCELLANEA

Wyoming Historical and Geological Society, 141. John Brown Dunbar, 142. General James Grant Wilson, 143. Cornplanter Medal for Iroquois Research, 144. Frazer Fund for Social Anthropology, 145. Margaret Elliott, 145. Minor notes, 145. Peabody Museum activities, 369. University Museum expedition, 370. American Museum bequest, 371. Porto Rico research, 371. Rev. A. G. Morice, 372. Sylvanus G. Morley, 372. Death of Alcée Fortier, 373. Minor notes, 373.

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No. 1

THE INFLUENCE OF THE HORSE IN THE DEVELOPMENT OF PLAINS CULTURE

BY CLARK WISSLER

ONE of the important problems pertaining to the Indians of the Plains is the relation of the European horse to their culture. The initial difficulty lies in our inability to determine the precise dates at which the successive tribes came into its possession.

Exploration in the Plains proceeded gradually from the east and south, chiefly during the eighteenth century. Certain Spanish accounts give us some data for the seventeenth and even the sixteenth century, but only for the extreme southern border. The early literature for the Missouri and Saskatchewan valleys is readily accessible, but an exhaustive search in the Spanish and French colonial archives for Louisiana and New Mexico will be necessary before a definite historical statement of the introduction of the horse can be made. However, a general résumé of the literature at hand will give approximate dates at which horses are mentioned for many tribes.

The great Spanish expeditions to explore the southern parts of the United States were well equipped with horses and even cattle and hogs. The adventurers were cavaliers; hence, horses were a necessity. De Soto carried some of his horses across the Mississippi in 1541. At about the same time Coronado reached the present bounds of Oklahoma from Santa Fe. Oñate is believed to have visited the Pawnee and Kansas, 1599-1601, and Peñalosa con-

ducted an expedition to the Mississippi in 1662. From Coronado's time on there was a growing trade with the Indians of the Gulf coast, and trade to the interior from Santa Fe as a base began about 1600. The pueblo village of Taos soon became the trade center for the Plains Indians. This trade seems to have reached its maximum about 1630. Doubtless the archives of Mexico and Spain contain data on the trade of this period, but nothing definite has so far found its way into literature. It is known, however, that the Indians of the Plains and especially the Pawnee were so troublesome in their plundering raids for horses that a post was established in Kansas about 1704 and an unsuccessful expedition undertaken by Villazur in 1720. Yet, in 1719 du Tisné, a Frenchman, visited two Pawnee villages in Oklahoma where he counted three hundred horses. As early as 1682 Henri de Tonty found horse-using Indians on the lower Missouri.¹ La Salle also states (1682) that the Gattacka (Kiowa-Apache) and Manrhoat (Kiowa?) had many horses.² In fact they found horses in many places. This is about the earliest date we can hope to find for the Missouri, but if horses were there at that time, it is most certain that the Pawnee were well provided with them. It seems, therefore, safe to conclude that some time during the interval 1600-1682, at least, the Caddoan tribes, the Tonkawa, and the Comanche, as well as the Kiowa, became fully equipped with horses. The Metontonta (Oto) came to see La Salle and brought a horse's hoof, stating that the Spanish made war upon them (1680). From the statements by Hennepin we infer that the Oto did not use horses at that time.

It is thus clear that the Indians below the Platte and lower Missouri were quite well supplied with horses by 1682, and there is no reason why many of them should not have had horses as early as 1600. Presumably those to get them first would be the Ute, Comanche, Apache, Kiowa, and the Caddo. As we move northward our historical data become a little more definite.

The sons of La Verendrye made a journey to the Rocky mountains from the Mandan in 1742-43. They encountered horse

¹ See Kansas Historical Collections, vol. ix, p. 741.

² Mooney in Seventeenth Annual Report, Bureau of American Ethnology, p. 160.

Indians, also mules and asses, and on their return to Canada mention the horses of their Assiniboine companions.¹ On this journey to the Rocky mountains they seem to have passed down west of the Black hills and to have reached the mountains in Wyoming or Colorado and on the return trip to have struck the Missouri in Nebraska or South Dakota. They were in fear of the Snake Indians. So far we have not been able to fully identify the tribal names of these explorers, but Beaux Hommes seems likely to be Crow, and Gens de l' Arc to be Cheyenne. Their "Le Grand Chef" was evidently the chief of the Pawnee, and the Chevaux, the Comanche. They fell in with the Prairie Sioux on the return trip. On one point they are definite: that horses were in use all along their route after they left the Mandan country.

Next we turn to the journal of La Verendrye's Mandan discoveries, 1738-39. He set out from a camp of Cree on the Assiniboine river and made the journey overland with a body of the Assiniboine. It is clear that the whole party were afoot, for "the women and dogs carry all the baggage, the men are burdened only with their arms; they make the dogs even carry wood to make the fires, being often obliged to encamp in the open prairie, from which the clumps of wood may be at a great distance."² No mention of seeing horses among the Mandan and the adjoining villages is made. On the other hand, we are told that the Indians gave him to understand "that the Pananas and Pananis had horses like the whites,"³ living to the south of them. One of his Assiniboine companions narrated an engagement with horsemen in armor while his party was in a raid to the Mississippi. Yet, in 1741, when the sons of La Verendrye set out toward the southwest, their statements seem to imply the possession of horses by the Mandan and the neighboring villages.

A little later (1751) Saint Pierre states that he saw horses and saddles which the Indians obtained by trade from the west,⁴ and

¹ *Découvertes et établissements des Français dans l'ouest et dans le sud de l'Amérique septentrionale (1614-1754)*, recueillis et publiés par Pierre Margry, part 6, pp. 589-611.

² *Canadian Archives*, 1889, 13.

³ *Ibid.*, 21.

⁴ *Ibid.*, 1886, vol. 26, p. cixiii.

notes a report from Fort Lajonquière in the Blackfoot country that the natives there traded for horses and saddles to the westward. This is the earliest suggestion of horses among the Blackfoot peoples.

We may now direct our search to the Hudson Bay posts of the north. Here we can refer directly to the journal of Anthony Hendry¹ who in 1754 set out from York Fort in company with a returning party of Assiniboiné to visit the Blackfoot tribes of the west, who to his seeming surprise were well supplied with horses. However, when he returned, his superiors at York regarded such a statement as the grossest of fabrications and in consequence gave little weight to his report. This would seem to indicate that the traders of Hudson bay had never heard of horse Indians. On the other hand, it is clear that the Assiniboiné who had regularly visited York Fort for some years could not have been ignorant of the fact, for Hendry states:

"17. Saturday. . . . They are a tribe of the Asinepoet Nation: and like them use the Horses for carrying the baggage and not to ride on." (This restricted use of the horse is very significant.) This confirms the report of horses in the Blackfoot country in 1751.

We have now accounted for practically all the tribes west of the Missouri and around the headwaters of the Saskatchewan. To the east in contact with the Assiniboiné were the Plains Cree and Plains Ojibwa. In 1776 Henry states that they had herds of horses like the Assiniboiné.² In 1772 Cocking met Cree far to the west, but fails to state that they had horses, though their possession is implied. La Verendrye (1738) makes a curious remark concerning an Indian near the Red river: "as he had his vehicle [voiture] with him," etc. This may signify horses, but we cannot be sure.

For the Dakota and other tribes above the mouth of the Missouri we seem to have negative evidence. As early as 1662 Radisson met a division of the Eastern Dakota in Wisconsin, and from his own quaint account of the manner of transporting baggage it is

¹ Proceedings and Transactions of the Royal Society of Canada, Third series, vol. 1, 1907, p. 307, and vol. 2, p. 89.

² Alexander Henry, *Travels and Adventures, etc.*, New York, 1809, pp. 289, 299.

clear that there were no horses there. These Indians were, it is true, not a typical Plains people, but Radisson tells of journeys to the Mississippi and to the vicinity of the Mille Lacs where he met other Indians of their kind. Nowhere have we noticed any implication that horses were known. From 1665 to 1699 Nicolas Perrot was in frequent contact with the Siouan tribes, but we find in his account no suggestion of horses. Le Sieur penetrated the country of the typical Plains Dakota in 1700, and, though he goes into much detail, we find no hint of horses being in the vicinity. Before his day neither Hennepin nor Du Luth mentions them for the Sioux country.

Then we come to the journal of Peter Pond, 1740-45, where we are told that the Yankton division of the Dakota had horses in abundance:

"Thay Have a Grate Number of Horses and Dogs which Carres there Bageag when they Move from Plase to Plase. . . . Thay Run down the Buffelow with thare Horses and Kill as Much Meat as thay Please. In Order to have thare Horseis Long Winded thay Slit thair Noses up to the Grissel of thare head which Make them Breath Verrey freely. I Have Sean them Run with those of Natrall Nostrals and Cum in Apearantley Not the Least Out of Breath."¹

Turning again to the Mandan we have no literature until 1804 when Lewis and Clark wintered among them, at which date all the Indians of the Missouri were well supplied with horses; together with the Arikara and Hidatsa they were trading horses and mules to the Assiniboine and Teton Dakota. However, in the journal of J. McDonnell (1793) we are told that at the Missouri the natives used horses to hunt buffalo.

The result of our survey is then quite definite. Horses were numerous among the Blackfoot as early as 1751, and they were used by the Assiniboine about the same date. They had not been acquired by the Mandan in 1738, but were among their immediate neighbors to the south. They are first definitely mentioned for the Teton Dakota in 1742, and for the Yankton at about the same date. The Iowa seem to have had some horses in 1724.²

¹ Collections of the State Historical Society of Wisconsin, vol. XVIII, p. 353.

² "In 1719, Du Tiane visited two villages of the Pawnees situated on a small stream some six leagues west of the Arkansas, probably in what is now Oklahoma. In

TRIBE	FIRST VISIT	FIRST MENTION OF HORSES
Arapaho	1804 Lewis and Clark	—
Arikara	1738 La Verendrye	1738 La Verendrye
Assiniboine	1658 Jesuits (?)	1742 La Verendrye, Jr.
Blackfoot	1751 Saint Pierre	1751 Saint Pierre
Cheyenne	1680 La Salle	—
Comanche	1714 La Harpe	1714 La Harpe
Crow	1742 La Verendrye, Jr.	1742 La Verendrye, Jr.
Gros Ventre	1784 Umfreville	1784 Umfreville
Hidatsa	1738 La Verendrye	1741 La Verendrye, Jr.
Kansas	1601 Oñate	1755
Kiowa	1682 La Salle	1682 La Salle
Iowa	1676 Zenobius	1724 Mead
Mandan	1738 La Verendrye	1742 La Verendrye
Missouri	1682 Tonty	1682 Tonty
Omaha	1761 (?)	—
Osage	1694 Gravier	1719 Du Tisné
Oto	1680 La Salle	—
Pawnee	1541 Coronado (?)	1704 Dupbar
Plains Cree	—	1738 La Verendrye
Ponca	1804 Lewis and Clark	—
Santee	1662 Radisson	1740 Peter Pond
Sarsi	1784 Umfreville	1784 Umfreville
Snake	1742 La Verendrye	1742 La Verendrye, Jr.
Teton	1680 La Salle	1742 La Verendrye, Jr.
Wichita	1541 Coronado	—

If these dates for first mention of the horse are tabulated or plotted on a map, we have a progressive series northward, beginning with 1682 and culminating on the Saskatchewan in 1751. In every case, however, we must assume an earlier date for its introduction. There is no good reason why the Pawnee should not have had horses in 1650 or even in 1630, since they were available in the

these villages he found 300 horses "which they value very highly, and could not do without." He procured from them two horses and a mule marked with a Spanish brand. Five years later Bourgmont endeavored to secure by trade with the Kansas a sufficient number of horses for his journey to the Paducas [Comanche] in western Kansas. They were unable to supply him with more than seven, and one of these was stolen by an Iowa Indian, who eloped thereon with a Kansas maiden to his own people. The Paducas, who seemed to be on good terms with the Spaniards, said they obtained their horses from them by barter, and that they had not yet been able to raise any colts."—*Transactions of the Kansas State Historical Society*, vol. x, 1907-1908, p. 107, footnote.

Spanish and Pueblo settlements of New Mexico. On the other hand, the progressive nature of our data from southeast to northwest may be entirely due to the gradual extension of exploration, and so have no other significance. For example, it is only in case of the Assiniboine, Cree, Eastern Dakota, Mandan, and the tribes in Iowa, Wisconsin, and parts of Illinois that we have evidence of their existence without horses; and even in these cases we can only say that explorers did not mention them.

In this connection we may give brief consideration to the use of horses east of the Mississippi. From the very first, the Spaniards were great importers of horses and other domestic animals. In this respect they stand in contrast to the French of Canada where the first horse (just one) was imported in 1647, the first cargo in 1665.¹ The English colonists imported horses moderately, except in Virginia, where the cavalier element, as among the Spaniards, brought in the horse, and where in 1669 wild horses became a pest. The first horses imported by the New England colonies came in 1629. Horses spread among the Indians of the Atlantic slope, but it was only in the south that they were numerous. According to Adair the Cherokee and other southern tribes were good horsemen. While these Indians could have secured their stock from Virginia, it is much more probable that they first came from Spanish settlements on the Gulf and even from the tribes west of the Mississippi. According to Swanton, Du Pratz and others speak of horses as numerous in the south and note that they seem a different variety from the European horse, which suggests the Indian horse of the west.

Adair gives us a good description of the riding gear of the Choctaw and other southern Indians. They had the rope for a bridle, made saddles with wood and green buffalo hide, and mounted from the "off-side," in all of which he recognizes the Spanish type and which reminds us of the Plains.² Even the saddles made by the Iroquois of New York are of this same western Indian type. All this strongly suggests that the dominant traits of horse culture among all the south Atlantic Indians came from across the Missis-

¹ Charlevoix, Shea edition, vol. 3, p. 83.

² Adair, James, *History of the American Indians*, London, 1775, p. 426.

ssippi, or at least indirectly from the same source as the western culture. The ultimate source was most likely the Spaniards. The French are a negligible factor because they settled at the mouth of the Mississippi after the horse had reached the Missouri. Even the English settlements in Virginia scarcely reached a point where they could supply horses to the Indians of the east before horses are reported in the west. It seems therefore clear that the Spaniards must be credited with the introduction of the horse to the Indians of the Plains and the lower Mississippi both east and west; the greater number of horses must have come from their more numerous settlements in the Southwest and Mexico.¹

As to the Indians north of the Ohio we have very little data, but the Wyandot are said to have first secured horses at Braddock's defeat (1755).² The Kansas also returned with horses during the same war.³ From Tanner's narrative it appears that the Indians around Detroit in 1775 made some use of horses. In a treaty made with the Sauk and Fox in 1804 it was stipulated that they return all stolen horses.⁴ From what information has come to hand it appears that before the French and Indian War horses were scarcely

¹ The first accounts we find for English exploration in the interior of the Southern States have been made available by Alvord and Bidgood (*First Explorations of the Trans-Allegheny Region*, Cleveland, 1912). The period covered is 1630-1674 and the territory the Appalachian region. No mention of horses in the hands of Indians is made, but the explorers and traders used horses and often left them with the Indians for safekeeping. The Cherokee towns on the Virginia frontier were usually the base of operations. Thus, it is certain that these Indians had an opportunity to acquire horses during this period; but they had had some contact with Spanish traders for almost a century. In Adair's day chickens and hogs were abundant among the Indians, but as early as 1699 the French found chickens abundant in the Houma villages. Needham and Arthur found wild hogs abundant in Georgia in 1674. When the French settled Louisiana they found peaches and figs under cultivation. These could scarcely have come from the English settlements of the Atlantic. Smith (*Anthropological Papers*, American Museum of Natural History, vol. 6, p. 208) reports impressions of peach-stones on pottery from a Kentucky site in which no traces of trade articles were found. At a very early date the Iroquois were raising peaches and apples. We have here a subject for investigation, but it is clear that the Southern Indians quickly took up certain traits brought in by the Spaniards whenever these happened to fit into their original culture.

² *Transactions of the Kansas State Historical Society*, vol. ix, p. 79.

³ *Ibid.*, vol. x, p. 331.

⁴ *Ibid.*, vol. xi, p. 334.

used in the Ohio valley and the Great Lakes country. Yet at this date they were in general use among the Indians of the South Atlantic and Gulf states and among all the tribes west of the Mississippi from north to south. We have previously noted the relatively late introduction of the horse to the tribes along the upper Mississippi.

The phenomenon we have is now plain; Indian horse culture spread rapidly from the Spanish settlements of the Southwest and Mexico upward between the Rocky mountains and the Mississippi river, and thence northward between the Missouri and the mountains, to the west of the Black hills and thence to the Saskatchewan country. On the south it spread out over the Gulf states, but did not become prominent north of Virginia, or between the Ohio and the Great Lakes, and reached the upper Mississippi relatively late. It reached the lower Colorado on the west, but did not reach far into California or any part of the Pacific coast to the north. Likewise it reached up into the Plateau area, and even to the Déné area.¹

The subject we have chosen for discussion is the relation of horse culture to other Plains traits and not the historical investigation of the introduction of the animal by Europeans. The preceding data are presented solely to define the problem and make no claim to completeness. However, we cannot well discuss the influence of horse culture without fixing its relative time of origin, for, if it greatly preceded other strong European influences, its value as a cultural characteristic is high. While the fixing of such a date is quite speculative, we have its limits clearly defined, for we find the horse in the far north in 1751 and know that it could not have reached the Indians before 1500.

It is generally considered that horses abandoned by De Soto's men in 1541 gave rise to the wild horses later found west of the lower Mississippi. This may be true. Recalling that at about the same time Coronado reached the Wichita, we have an increased probability that the nuclei of several wild herds were formed about this date. However, we have found no historical support to this

¹ See Lewis, A. B., *Tribes of the Columbia Valley and the Coast of Washington and Oregon, Memoirs of the American Anthropological Association*, vol. 1, part 2.

theory, for the first mention of wild horses is much later.¹ However, it may be that the Indians profited by the use they saw made of horses and took possession of some abandoned animals. This would not have been difficult. The Pawnee have a story that the first horse they ever saw came into their village and permitted itself to be handled. Such could have happened with domesticated horses just turned loose. In other words, a normal series of events could have placed the horse in the hands of Indians and at the same time started the wild herds. If this did happen in 1541, 1560 could have found several tribes in the south well mounted and far advanced in horse culture. Then we must not overlook the tribes in southern Texas who even in 1541 could have easily reached Spanish posts on the other side of the Rio Grande. So 1600 could have found the horse at the headwaters of the Missouri and even among the Blackfoot. This is, of course, speculation, but it is well to note that for all we know the Crow and the Blackfoot, for instance, may have had horses for 150 years before their first mention in 1742 and 1751. In other words, we have an interval from 1550 to 1850, or three hundred years, in which the horse culture of the Plains could have developed along its own lines.

It seems quite reasonable to assume that horse raiding by the Pawnee and Kiowa had begun in the early years of 1600. If this is correct and these historic tribes were then in the same relative positions as later, 1650 should have found the horse abundant on the Saskatchewan. At least, we have positive historical data for the general use of the horse throughout all the area from the headwaters of the Saskatchewan, down the west of the Missouri and thence to the Mississippi by 1751, and data that make clear the possibility of such distribution as early as 1650. The tribes west of the Missouri and the lower Mississippi were practically free until after 1840 and, while subject to some cultural influence and external control before that time, were on the whole about as free to develop their culture as they could have been before the period of discovery. We thus have a positive period of one hundred years in which the Indian was fairly free to develop his horse culture

¹ Hendry (op. cit., p. 335) saw wild horses on the Saskatchewan in 1754.

and a very probable period of another one hundred years in which many of the tribes were in no direct contact with whites of any description. We thus have a unique example of the development of a culture trait in response to contact with another culture and its transmission from one tribe to another among several distinct linguistic stocks, all of which suggests several important analytic problems.

Thus we may ask—

1. Is the Plains culture as a whole older than the introduction of the horse?
2. What changes in culture traits can be attributed to the influence of horse culture?
3. What had the environment to do with the distribution of horse culture?

If we take up the first and look for traits older than the introduction of the horse, we can lay hands upon at least one such. The use of dogs for transporting baggage is mentioned by Coronado's men, a date before the era of the horse. Furthermore, we have linguistic evidence in the names for horse, such as "mysterious dog" and "elk-dog," certainly implying a resemblance in the uses of the two animals. We should expect no one to doubt the assumption that dog traction, one of the most distinctive traits of Plains culture, was fully diffused over the area before the horse was known.

As to the tipi in the form familiar in the nineteenth century, we are far less certain. Obviously dogs could not have transported the tipi of horse days with its long heavy poles and bulky cover. Descriptions of the tipi have not been found by us at a period when the horse was unknown. The tents mentioned by Castañeda appear to be tipis, but we cannot be sure of their detailed structure. They were, however, transported by dogs. The distribution of the tipi among a few of the Central Algonkin and its analogous forms to the eastward among the Cree, may warrant a guess that it was diffused over the Plains in some form along with dog traction; but a mere guess will not help us here. However, in another place we have called attention to the apparent relation between the travois and dragging tipi poles. The horse travois is made of tipi poles

and the few dog travois we have seen had their poles pointed at the butts precisely like the tipi poles. Yet the true travois was found in the northern part of the Plains; the tribes of the south placed the load upon the horse and dragged the tipi poles at the sides. In Castañeda's time this was the way for dogs. In short, there are several reasons for assuming that the northern travois was developed from the tipi poles dragged by dogs. If we accept this explanation, it is clear that a tipi of some form and the travois are historically associated and that the former is the older.

Turning to less material things we may cite the coup and methods of warfare. It would seem that since almost everywhere in the Plains a war party set out on foot, even though they went after horses, it is safe to assume that the entire procedure had become a fixed custom before the advent of the horse. The coup is so fundamental a matter in the warring system of the Plains that it also must have been there for a long time. This, however, is not a strong argument.

As to the sun dance and the camp circle, two associated traits, we have no evidence. The same is true of the police, or soldier system and societies for men. Yet there is one kind of evidence that applies in a general way to all traits: viz., historical tradition. As a rule, the Indians themselves are positive that the acquisition of horses was much more recent than the sun dance and other important traits of culture. While this has some weight we must not value it too highly, for the sun dance itself was but recently introduced to some of the Ojibwa and there are no good reasons why it could not have spread rapidly over the Plains at any time.

If we turn to some of the intermediate tribes, like the Mandan, we can prove by archeology the existence of the earth-lodge before the horse. Maize also was among the Mandan. It seems most certain that Mandan culture was essentially developed long before 1738.

The net result of this survey is, then, that we have positive evidence of the dog travois development before the horse, but that on other traits of culture we have only presumptions for the area at large.

If we turn to migration the case is equally difficult, for evidence of real migration in the Plains is rare. The Cheyenne are the one clear case, but it seems that the first stage of this southern movement must have occurred even before horses reached them. If we take the Blackfeet, we find them mounted when first discovered, but occupying practically the territory of later years; that they as a people developed elsewhere may be, but they could scarcely have migrated during the years between getting horses and the record of them in 1754 or even earlier without having traditions of such a movement as definite as their traditions that horses were acquired from other tribes. Likewise the Pawnee did not change their habitat until moved by pressure of the Government.

It may be correct to interpret the general tendency of all the surrounding tribes to raid the Snake as due to the latter's possession of horses and lack of firearms with which to repel the invaders. The Pawnee with the sons of La Verendrye in 1742 turned back at signs of Snake camps, indicating that they were a power to be considered. Blackfoot traditions indicate that in early days the Snake were frequently found hunting on the upper Missouri, but were eventually pushed back because they lacked firearms. If we accept this at its face value, we see that while it is probable that the presence of the horse urged the Snake eastward into the Plains like their brothers, the Comanche, this was equalized by the superior arms and plundering ambitions of other tribes. Thus, in respect to the Snake, the horse could have extended their ranges only to the north and west, if indeed it had any effect.

It is true that some small movements seem to have occurred, but these are not very significant and those of which we have historical knowledge took place chiefly among the tribes along the banks of the upper Mississippi where the horse was introduced last. In fact, very few of the Plains tribes are known to have permanently shifted their homes during the period 1680-1860. We must therefore accept their positions as we find them at the opening of the historical period.

There is, however, a modified form of migration that must be noted—the practice of going on periodical hunts, when the whole

social unit moved and killed buffalo as an organized body. Of the typical tribes we have definite statements from the Blackfoot and the Teton-Dakota that they had permanent winter camping places from which they set out in the spring and to which they returned in the autumn.¹ Their ranging was usually within recognized limits. That they also camped in winter and roamed in summer before the coming of the horse is probable. The agricultural tribes of the eastern border, such as the Pawnee, Osage, etc., were in historic times given to the planting of their fields and then setting off on a grand hunt. That this was not unknown before the time of the horse is suggested by Perrot's account of the Illinois.² While this proves nothing as to the true Plains tribes, it raises a strong presumption that the periodical hunt of the Pawnee, etc., cited above, was practised in pre-Columbian times; so the custom observed in horse days was merely a shift from dog to horse travois, and from walking to riding, and not strictly a new trait. Indeed, why should the Plains people have had the dog travois if they did not go on long journeys by land? Hence, I believe it must be granted that the circumscribed ranging of the Plains tribes was a cultural trait before the advent of the horse.

On the other hand, the horse may have intensified this ranging and even extended it to the final extinction of maize planting. Thus Maximilian says of the Ponca:

"They formerly lived, like the Omahas, in clay huts, at the mouth of the river, but their powerful enemies, the Sioux and Pawnees, destroyed their villages, and they have since adopted the mode of life of the former, living more generally in tents made of skins, and changing their place from time to time. . . . They plant maize, which they sell to the Sioux, but they had neglected to cultivate this grain for about three years, and obtained it from the Omahas."³

¹ Mooney has made an argument for the migration of the Kiowa from Montana to their present location 1780-1832 (Seventeenth Annual Report, Bureau of American Ethnology, part 1), but Scott dissents, bringing both historical and traditional evidence of their position south of the Pawnee before 1681 (*American Anthropologist*, n. s., vol. 13, p. 372). Both may be correct, for the presence of the Kiowa in the north may have been due to their periodical wanderings.

² Perrot, Nicolas, *Indian Tribes of the Upper Mississippi, etc.*, Cleveland, 1911, p. 119.

³ Maximilian, Prince of Wied, *Travels in the Interior of North America*, translated by H. Evans Lloyd, London, 1843, p. 127.

The Comanche were the great horse Indians of early days. The Pawnee say that in former times other tribes named them horse Indians. The sons of La Verendrye met those they called Horse Indians, west of the Black Hills in 1741. There is said to be good evidence that they ranged even to the mouth of the Yellowstone. It seems but fair to assume that such an extensive range came after the use of horses. There are some traditional data, as for example, the Blackfoot believe their frequent journeys to the Missouri were not undertaken before they acquired horses. However, such evidence must be taken with reserve, for even in later times Blackfoot war parties to the Crow and to the Dakota country usually set out on foot.

Perhaps with more search we could find indications that the coming of the horse extended the range of the tribes. The possession of this new means of transportation and this new element of property would no doubt act as a cultural stimulant. The Pawnee must have been at the flood-tide of their national life during the period 1700-1800. The Blackfoot seem to have reached theirs even at the time of Hendry in 1754, at which time the entire population rode horseback. Our difficulty here as elsewhere arises from the fact cited above that the horse reached many of the tribes before they came to the knowledge of explorers. Yet, if we take the available data into consideration there is good ground for the assumption that the most typical tribes all reached the high-water mark of expansion and culture in the eighteenth century.

We must not, however, too hastily conclude that the introduction of the horse during the seventeenth century was the chief cause of this. The presence of the white traders on the continent must be considered. Firearms were soon in the hands of the tribes along the Mississippi and so spread westward. These new weapons must also have brought feelings of power and confidence. Then again the trade by which they were received created new demands, new wants, and so stimulated production. Thus, it seems equally probable that the disturbed balances of power from the introduction of guns and the necessity of visiting regions adjacent to trading posts, must have exerted a strong influence upon the periodical

ranging of tribes, a change in which the horse was undoubtedly a large factor, but not the only one.

We may recapitulate then by stating that while there is a presumption that the horse stimulated periodic ranging on the Plains, there were other factors capable of exerting similar influences; but that actual migration was due to the horse is quite unlikely. The existence of former periodic ranging is proven by historical evidence in some cases and made inferential in others by the previous development of dog traction. In short, we may say that only those traits directly associated with the horse can be taken as later; the most characteristic traits, for want of evidence to the contrary, must be given priority, and that while the horse along with other European influences may have intensified and more completely diffused the various traits, there is no good evidence at hand to support the view that the horse led to the development of the important traits. In other words, from a qualitative point of view the culture of the Plains would have been much the same without the horse. It does not follow though, that these Plains traits were diffused over the same area as found in 1850. For example, the characterization of the southern Plains Indians in the Icazbalceta¹ manuscript can scarcely be improved upon as defining the Plains type of culture, but we have no way of determining its extent.

We may be reminded that in the Plains area are several subtypes of culture. There are first of all the nomadic tribes of which the Blackfoot, Crow, Teton, Kiowa, Arapaho, Cheyenne, and Comanche may be taken as types. These are the great horse and buffalo Indians as we know them. They ranged north and south in the true plains while on either border were tribes of less intense culture and varied by additional traits. Our problem, therefore, is as to whether the development of this typical group in which the horse seems so important a factor did not occur after the acquisition of the horse. If so, then the true Plains culture may properly be said to have developed with the introduction of the horse, even though every trait may have been in existence somewhere in the area long before. A rather extended argument could be presented on this point, but a few suggestions must suffice.

¹ Winship, *The Journey of Coronado* (1904 edition), p. 194.

1. Though true migration since horse days is rare, there is a very strong presumption that several of these typical tribes had scarcely reached their historic ranges by 1600; and in that event could scarcely have developed their present culture before the horse came.

2. The high tide in typical Plains culture seems to have come in the eighteenth and nineteenth centuries. While this was the era of trade, yet the horse increased the economic prosperity and created individual wealth with certain degrees of luxury and leisure; also it traveled ever ahead of white trade and the white trader.

3. The horse was a great inciter of predatory warfare which must have increased the range and intensity of operations, thus intensifying tribal contact and increasing intertribal knowledge, all of which would favor diffusion.

4. The culture of these tribes takes its individuality from apparent adjustments of traits to a more nomadic and intense form of life, the practical inhibition of such traits as pottery, basketry, agriculture, and fixed houses; rather than from the introduction of any new traits except those directly associated with the horse.

Hence, we may formulate for further consideration the proposition that while no important Plains traits except those directly associated with the horse seem to have come into existence, the horse is largely responsible for such modifications and realignments as give us the typical Plains culture of the nineteenth century, or which differentiate it from the subtypes in the same area. Thus we can see how practically all the essential elements of Plains culture would have gone on, if the horse had been denied them; but it is difficult to see how the vigor and accentuated association of traits forming the typical group and their intense occupancy of the true plains could have been what it was in 1800 without the horse. A type of culture, we should note, is the conception of an associated group of traits, and it is the manner of the association rather than the identity of the traits that determines it.

We may now turn to a more specific examination of the point as to what distinct modifications of culture were produced.

In the first place, the horse brought with it all its own associated

elements of culture. Our collections show that saddles and other riding gear are quite uniform in type for the Plains and are on the whole after Spanish patterns. Even the use of the reata seems to be of Spanish-American origin. Riding itself was, of course, intrusive. Knowledge of how to care for horses would also come in from the Spanish. So we must surely have had a whole group of associated culture traits carried along with the horse.

Thus we have a fine example of diffusion, like the sun dance, men's societies, etc. Could we show that the diffusion of horse culture preceded the diffusion of these other traits, we should have a strong case for the horse as a modifier of culture. As we have seen, what little evidence there is points in the other direction.

The use of the horse in war and hunting may have greatly modified weapons, tactics, etc. Thus, it seems quite probable that the long spear of the Comanche and other southern tribes was developed for use on horseback, possibly even copied directly from the Spaniards. Yet we are dealing with elements of associated horse traits, constituting the horse cultural complex. Our problem is, however, as to whether there are other complexes created or modified indirectly by the presence of the horse. In this connection we can offer little save speculation. As we have so far developed the subject there is some reason for expecting that the relative intensities of many traits were changed, giving us a different cultural whole. We have noted the probability that horse culture inhibited tendencies toward agriculture, pottery, and basketry, and favored the use and development of the tipi; but our observations can apply only to the less typical tribes who had these traits, since their mere absence is not satisfactory evidence of inhibition. As an intensifier of original Plains traits, the horse presents its strongest claim. Some of the early Spanish observers note the great use of large dogs, both for packing and travois traction, and the almost entire dependence on the buffalo; here we have at least some of the highly characteristic traits of Plains culture in horse days. To such a culture the horse would most surely be a new and superior dog; he would like any greatly improved appliance enrich and intensify development in certain established direc-

tions. It is also conceivable that this development had a similar effect on other material traits, but to varying degrees. We see, however, no good ground for assuming that any important traits, material or otherwise, were either dropped or added among the buffalo-hunting dog-using rovers observed by the first Spanish explorers. Economic prosperity and contact with the white race have greatly modified the material culture of the Indian, physiologically by interbreeding and disease it has brought marked changes and politically it has stamped out his own government; but not even the great wealth of the Osage or the Pawnee has served to modify greatly their religious practices or their social ideals. It is chiefly the persistently driven wedge of the missionary and the teacher that is slowly overcoming that tenacious phase of culture. The familiar phenomena of tenacity of hold upon tribal religious, medical, and social practices seems a good argument against the great effects of new material traits upon culture in general. Thus, it would be exceptional to find that the introduction of the horse was alone responsible for the typical Plains culture.

We have noted the peculiar distribution of the horse, how it spread rapidly east and west of the lower Mississippi and especially on the west passed quickly northward, but west of the Missouri. We thus have the section between the Missouri and the Mississippi and eastward between the Ohio and the Lakes, in which horse culture made its appearance late, if at all. We noted also its failure to make progress in California. It has been suggested many times that the distribution of the horse was correlated with the geographical environment, but the causes for the above phenomena are by no means obvious. Thus, it is fair to ask what would have been the area of diffusion in a wild state if introduced over the Mexican frontier. In such a region the horse would live somewhat as he did upon the great ranches of some years ago, from which we might infer that the distribution would follow the boundaries of the grazing industry. The grazing area is fairly well defined—a broad stretch east of the mountains and through western Kansas and Nebraska, parts of the Dakotas west of the Missouri, and a small section of the Saskatchewan country. Ranchmen have said

that this area was marked by peculiar short grasses that cured well and furnished good winter grazing, also that the snow did not lie deep enough to prevent grazing except for very short periods. While this may be true, it does not follow that the horse in a wild state would confine himself to this area, for the buffalo did not. While this horse-using Indian area is in a way coincident with the grazing area, we have not fallen in with any study of the reasons why grazing was so confined. It is quite possible that it was largely accidental and due to political and economic factors, such as relatively greater profit from agriculture east of the range, the direction of settlement, etc. Thus, unfortunately, no one has worked out this problem for us, so that we can only recognize a presumption that the region offered very favorable conditions for the inclusive diffusion of wild horses. The significance of this point lies not in the natural diffusion of horses, for the Indian was not by any means a passive factor in the case, but in its bearing upon the care given horses by their owners. Here again we lack information. The corn-raising tribes were the only ones producing suitable food for horses; they were also the only ones having buildings capable of sheltering horses. Thus Maximilian says of the Mandan:

"Inside of the winter huts is a particular compartment, where the horses are put in the evening, and fed with maize. In the daytime they are driven into the prairie, and fed in the bushes, on the bark of poplars. There are, probably, above 300 horses in the two Mandan villages."¹

From Dunbar's account of the Pawnee we read:

"They went into winter quarters in some place where water, wood and unburnt grass in abundance for the horses were to be had. Here they remained till forage became scarce, when another place was sought. If grass could not be found in sufficient quantity, they cut cotton-wood trees, and subsisted the horses on the bark and tender twigs. The return to the villages did not take place till young grass was started in the spring."²

The Crow, according to Maximilian, possessed "more horses than any other tribe of the Missouri, and to send them in the winter

¹ Maximilian, Prince of Wied, *Travels in the Interior of North America*, translated by H. Evans Lloyd, London, 1843, p. 272.

² *Magazine of American History*, 1882, vol. 5, no. 5, p. 332.

to Wind River, to feed on a certain shrub, which soon fattens them" (p. 175).

Thus it is apparent that the Indians did take some care of their horses. In case of the Pawnee they roamed toward the "range area." Yet all the typical tribes of the Plains from the Assiniboine of the north to the Comanche of the south had no buildings large enough to shelter horses, nor have we any record of their preparing hay or other feed for winter. Hence, in the main the horses of these Indians must have bred under conditions similar to those of the range in later times. Yet that this selective influence would cause the horses of tribes along the upper Mississippi to die out cannot be entertained, because each spring they could be replenished by raids upon their horse-using neighbors, and again it was these eastern tribes that raised an abundance of maize from which horses could be fed.

Another point is as to the success of the Indians in breeding horses. Here again we lack good data. J. C. Mead states that the "Paduca [Comanche] who seemed to be on good terms with the Spaniards, said they obtained their horses from them by barter, and that they had not yet been able to raise any colts" (1724).¹ Yet the herds of Indians must have increased because the Indian horse was a type of its own. Many tribes had special medicine formulæ for increasing the number of their colts. Again, we note that Marcy (1852) found the Comanche still dependent upon theft or trade:

"But as they have no commodity for exchange that the traders desire except horses and mules, they must necessarily give these for the goods, and large numbers are annually disposed of in this manner. As I have before mentioned, nearly all these animals are pilfered from the Mexicans; and as the number they traffic away must be replaced by new levies upon their victims, of course all that the traders obtain causes a corresponding increase in the amount of depredations."²

Spanish brands were noted by Umfreville on the Saskatchewan in 1784, and it is a fair assumption that the asses seen by Hendry

¹ Kansas Historical Society Collections, vol. x, p. 107.

² Marcy, *Exploration of the Red River of Louisiana*, p. 106.

among the Blackfoot in 1754 also found their way by theft and trade northward from Mexico.

Thus, while a supply of horses was constantly introduced by predatory warfare upon the Spanish settlements and passed along northward by theft or native trade, we have on the other hand the existence of a more or less distinct type of Indian horse which suggests a certain amount of breeding. There were, however, herds of wild horses in parts of the area with which this so-called Indian type of horse may be associated.

While we have no direct data as to the extent of Indian propagation, we have the experiences of the Government in adapting the Indians to reservation life. Horse raiding was broken up with great difficulty, and it was many years before the Indians made any headway with the increase of their own herds. This seems to imply that the traditional as well as the ideal way to acquire horses was by raiding. The environmental problem thus shifts from horse to man, the question being as to whether there were geographical causes restricting raiding to certain regions.

The area in which such raiding was most in evidence was the region west of a line extending due south from Lake Winnipeg to the Missouri and thence along that river and the Mississippi to the present boundary of Louisiana, thence southwestward to the Rio Grande. In raiding one must expect active pursuit. As the source of supply for horses was to the south, the tribes above the Missouri and the Ohio must needs have crossed over the Missouri or the Mississippi for their booty and likewise have ferried or swam their horses over on the return trip. This would be difficult under ordinary circumstances, but in a running fight would be disastrous. That the Indians of the Southeast did ferry horses across the Mississippi is most certain, but on the other hand, they did not develop horse raiding as the leading feature of warfare. The westward expansion of the English colonies did not place horses within striking distance of the Illinois tribes until long after horses were numerous among their western neighbors. Hence, our data seem to favor the view that the early spread of the horse northward west of the Missouri and not eastward was due to the physical barriers presented by the river.

Still we must consider the possibility of ethnic factors, or ethnic differences, between these two regions. Nothing appears in the material culture of the Illinois and their neighbors that would offset the value of the horse for hunting and war, unless it be canoes. Their use for river travel was quite characteristic of the region and was adopted by the French. It may well be that the whole tendency of the French colonists to do without horses was due to their having taken up the canoe culture of the Indian. In no part of the great canoe area did horse culture secure a strong footing. While we must not give too much weight to this, it is reasonable to assume that where canoe travel was well developed, the value of the horse would be less. Hence, the canoe culture of the region we are considering may have offered effective resistance to the early diffusion of the horse. Obviously the horse could not be substituted for the canoe as readily as for the dog.

The net result of this inquiry has then been to give some weight to the interference of canoes and to make quite probable the influence of the Mississippi and the lower Missouri rivers as physical barriers to the northeastward spread of the horse by raiding. Both are doubtless correlated and to a large extent environmental factors. As to the presumption that the kind and quality of pasturage may have been an important factor, we find little support.

Finally, among the ethnic factors we may consider relative tribal efficiencies as horse culture carriers.

Our data on the northern plains point toward the Shoshone (Snake) as the chief distributors, but we can get no historical light on their relations with the Spaniards. We do know, however, that the tribes now at Fort Hall, Idaho, and those at Wind River, Wyoming, formed a fairly homogeneous group and still regard themselves as close relatives. Their range seems to have been from eastern Colorado to the headwaters of the Missouri and westward. It is probable that in 1600 the Comanche were also a part of this group. Thus, while we lack definite historic data as to contact with the Spaniards, we have both territorial and ethnic conditions for the ready diffusion of horses among the Shoshone. If the Wind River division was not in direct contact with the Spanish settle-

ments, they were within striking distance of the Pawnee. This, taken with the direct testimony of the Blackfoot as early as 1751 and the still earlier statement of La Verendrye, makes a strong case for the Shoshone as the horse carriers to the Saskatchewan country and all points above the Platte.

As evidence for the existence of a trade or plunder channel by which horses could readily pass from the Spanish settlements to the Saskatchewan, we may note that Hendry saw asses among the Blackfoot in 1754, a few years later Cocking saw mules, and later Umfreville (1783) saw horses with "Roman capitals burnt in their flanks with a hot iron." We have no evidence that asses and mules were propagated by the Plains Indians, and above all the brands must certainly have been placed by Europeans. Further, the Blackfoot traditions are that their supply of horses came from the Snake and the Flathead. Thus, with the Shoshonean link we have direct contact between the headwaters of the Rio Grande and the Saskatchewan. We see further that the Crow, Teton, Arapaho, Kiowa, Pawnee, and later the Cheyenne were in direct contact with the long range of the Shoshone. This also explains the early appearance of the horse among the Nez Percé and some of the Salish. As active carriers of horse culture the Shoshone must have exerted considerable influence on the early material culture of the typical northern Plains tribes, a phase of the problem we shall discuss elsewhere. In this connection they are an offset against the assumed influence of environment in turning horse culture to the west.

While the problem we have discussed is far too complex to permit a paper of this kind to be more than a suggestion of new lines of research, the following conclusions seem permissible: The horse reached most, if not all, of the typical Plains tribes from three hundred to two hundred years before they lost their cultural independence. In its diffusion over the area a large number of associated traits were carried along as a whole, or as a cultural complex. At least some of the tribes had developed dog traction to meet their nomadic wants before the horse came, and needed, therefore, but to substitute the horse for the dog in their own dog-culture complex and to

take over the necessary parts of the Spanish horse-culture complex. Thus among the less sedentary tribes the whole basic structure of the later horse Indian culture was in existence when the horse came. We have found no reason to believe that the introduction of the horse did anything more than intensify and perhaps more completely diffuse the cultural whole previously formed. As such, however, it seems responsible for reversing cultural values in that the earlier dominant sedentary cultures of the Siouan and Caddoan tribes were predominated by the Shoshone and other formerly struggling nomads of their old frontier. As the leading horse carriers, the Shoshone played a large part in this development, but they lacked many of the strong cultural traits which the Crow, Teton, etc., received from the original Plains culture, in consequence of which they now fail to qualify as typical tribes. Finally, it appears probable that the accidental presence on the New Mexican frontier of a well-developed dog-traction culture was the chief determining factor in the direction of horse-culture diffusion though there were other ethnic factors as well as environmental conditions that could have contributed to the result.

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THE BOOMERANG IN ANCIENT BABYLONIA

By JAMES B. NIES

IN Germany last summer my attention was drawn to a recent supplement of *Kosmos*, issued in the form of a monograph on the physical geography of the world during the several geological epochs.¹ Maps showing the surface of the earth at each period form an interesting part of the little volume. By these maps it is shown that continents now separated by vast oceans were once united.

However firmly we may believe this to have been the case, we must admit that the matter, at present, floats in an atmosphere of theory. The distribution of animals and other living creatures may offer, here and there, a thread of evidence. Unusual artifacts, in places widely separated, may point to a common source; though artifacts of almost similar character are best explained by psychological response to similar needs the world over in all ages. There are, however, at least three objects which originated in a remote past, that would seem to require, in each case, a common source and to which the argument from psychology is not applicable. One of these is the cosmic *step-pyramid*, found in Egypt,² Asia,³ and America,⁴ the same in appearance and purpose. Another is the *swastika*, or sun symbol, found in Europe, Asia, and America. The third is the *boomerang*, found in ancient Egypt⁵ and modern Australia. A weapon similar to it is found in northeastern Africa and southern India, and there can scarcely be a doubt that it was once

¹ Wilhelm Bölsche, *Festländer und Meere im Wechsel der Zeiten*, Stuttgart, 1913.

² Wm. Flinders Petrie, *Ten Years' Digging in Egypt*, p. 141 et seq.

³ Hilprecht, *Explorations in Bible Lands*, pp. 459-469. Hommel, *Geographie*, p. 126.

⁴ E. G. Squier, *Peru*, pp. 130-133. Joyce, *South American Archaeology*, pp. 142, 179. Max Uhle, *Pachacamac*, chap. xx.

⁵ Erman, *Ägyptisches Leben*, pp. 322, 329; also *Grammatik*, p. 310, no. 6. Prof. William Max Müller is authority for the statement that boomerangs were not used as war weapons in Egypt after 2000 B. C., but for hunting birds they were used there much later.

known on the American continent, the obtuse-angled rabbit-sticks of the Hopi of Arizona and Gabrieleño Indians of southern California being similar in shape and characteristics.¹ In such legends as "Coyote takes Arrows from Owl" we have also a vestige of the use of the boomerang.²

It is not my purpose to present a paper on the boomerang, but to show, from the evidence of a cuneiform sign and its meanings, given in the Assyrian texts, that the boomerang was known in Babylonia not to the historic but to the prehistoric aborigines that first settled in Shumer and Akkad. The interest of this matter lies in the fact that, if we can thus reach back into prehistoric times in the case of one such sign, we may hope for information of value to anthropology from other signs as well and from other ideographic languages such as the Chinese, the Egyptian, the Hittite, and the Aztec.

In order that there may be no doubt as to what is meant by the word boomerang, a distinction, followed by a few words of explanation, will here be in place. We must distinguish between the boomerang and the throwing-stick. The latter was, perhaps, in universal use among prehistoric men and is found practically everywhere among contemporary primitives. It assumes various forms from a plain club-like stick to a hammer, and, when thrown, it does not return.

The return-boomerang, on the other hand, is an implement made of a single piece of wood, in a form that varies from a parabola to an obtuse angle. The upper side must be convex and the lower flat. Northcote Whitbridge Thomas, in his article on this subject in the 11th edition of the *Encyclopædia Britannica*, says they are so modeled that the thickness is about one-sixth of the breadth, which again is one-twelfth of the length, the last varying from 6 inches to 3 or 4 feet. In Australia the return boomerang is always curved at an angle of 90° or more, but the angle may vary from 70° to 120°. The weight also varies from 4 to 12 ounces, but 8 ounces may be regarded as the average weight.

¹ F. W. Hodge, ed., *Handbook of American Indians*, pt. 2, p. 348.

² Goddard, *Apache Texts*, 27, page 225.

Thomas states that the arms have a skew, being twisted two or three degrees from the plane, while the ends are raised above the plane of the weapon, and adds that "the peculiarity of the boomerang flight depends mainly on its skew."¹ It is thrown with concave side in front, and goes in a straight line, with a whistling sound, some 30 or more yards, with nearly vertical rotation. Then it inclines to the left, lying over on the flat side, and, rising in the air, after describing a circle of 50 or more yards in diameter, it returns to the thrower.

In Berlin last summer I met Erman, the Egyptologist, and asked him whether he had, in the museum, any specimens of Egyptian boomerangs. He said, "Yes, several, but they do not return." I later saw these and found them to be a variety suitable for hunting birds. In his *Ägyptisches Leben* he has an illustration of a scene taken



FIG. 1.—Egyptian boomerang from Gurneh, XVIII Dynasty or earlier, in the Metropolitan Museum, New York.

from a papyrus in which a bird hunter is actually using a return-boomerang. There can, therefore, be no doubt that it was known. Through the courtesy of Dr Lithgow I was able to examine a specimen that came from Gurneh in Egypt and is now in the Metropolitan Museum of Art. It was bought from a native in 1911 and seems characteristic. It is slightly flat on one side, convex on the other, and has a rather wide angle, as the accompanying illustration (fig. 1) will show. It weighs 6 ounces, is 4.3 cm. wide, 1.3 thick at the middle, 54 cm. round, 46 cm. across, and the arch is 13.5 cm. high. The angle I have not taken. I think this, like the specimens in Berlin, is a bird boomerang, and I hope Dr Lithgow will have a replica of it made for testing purposes. It does not seem to have the skew or

¹ Illustration in article "Boomerang," *Encyclopædia Britannica*, 11th ed.

the elevation of 2° to 3° at the points, which Thomas states are necessary to give the weapon its peculiar flight, but then one will find that these characteristics are also wanting in some of the boomerangs from Australia in the American Museum of Natural History in New York.¹

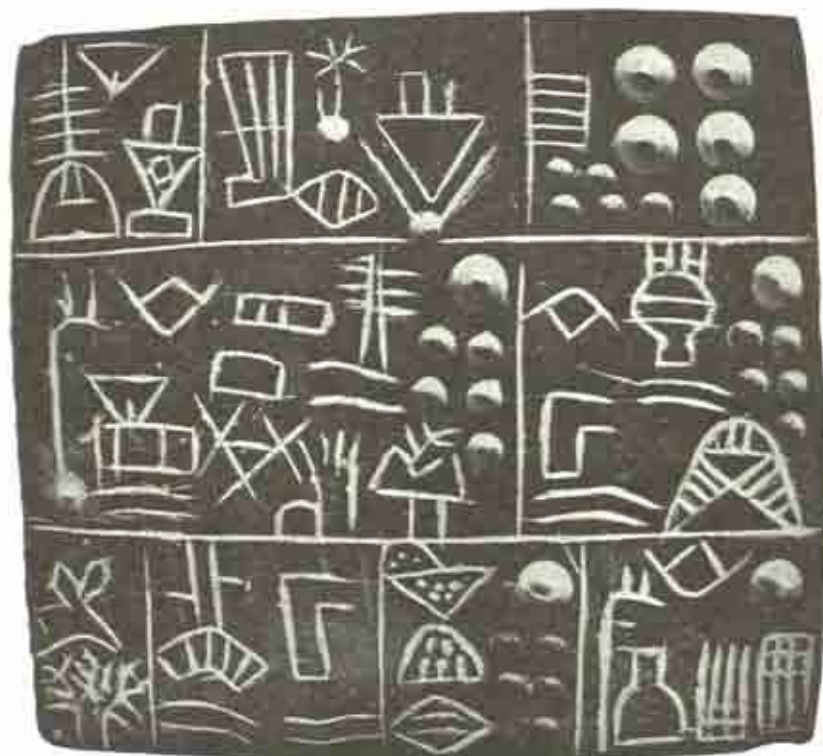


FIG. 2.—Archaic Babylonian tablet, known as the Hoffman Tablet, in the library of the General Theological Seminary, New York.²

The question we have now to answer is, Did the boomerang exist in ancient Babylonia, or, rather was it, at any time, used by the race known as Babylonians, or Sumerians?

¹ Mr Van Shrum, an expert maker and thrower of boomerangs, during his recent engagement at the Hippodrome in New York examined this specimen and said it was peculiarly suited for bird hunting and would return, if thrown high, even though it lacks the skew.

² For translation and discussion see article by Ogden and Barton in *Journal of the American Oriental Society*, 23, p. 19 ff.

Hidden in many of the highly conventionalized signs of the Assyrian language are pictographs that trace back to a remote antiquity. Babylonian writing ceased about 50 B.C. From that date backward there is an unbroken series of historical inscriptions to Ur-nina whose date is conservatively fixed as 3000 B.C., but may be much earlier. Before him are six or seven kings and patesis of undetermined dates. During all this time the simplification of signs from the often awkward and complicated pictograph went on, but, even in the early stages of the writing, it is not always possible to determine the pictographs from which many of the signs are derived, and it is evident that a considerable period must have elapsed between the time of the inscriptions and the purely pictographic stage of the writing.

To a very early period belong such tablets as the Hoffman, now in the General Theological Seminary collection (fig. 2), an archaic tablet in the University Museum collection in Philadelphia, and the Blau monument in the British Museum. Apparently in these also the signs are to be read in a conventional way as ideograms and phonograms, though some have ventured to date these as early as 6000 B.C. They belong, without doubt, to a prehistoric time, and their study becomes properly a matter of interest to anthropologists as they reveal the practices, utensils, and weapons in use when the pictographs were in the earliest stage of evolution as written language. The type of Babylonian writing familiar to most of us is the cuneiform or wedge-sign type, but there is an earlier linear form which alone appears on such tablets as the Hoffman and on the majority of the seal cylinders. This linear was *engraved* on stone or other hard substance, and this was evidently the type from which the cuneiform was derived. It is clear that the linear originated in a different environment from the cuneiform. A primitive people uses the material to supply its common wants that is near at hand. The linear form originated where stone abounded. Babylonia is, however, a land without stone, but with abundance of clay. Making signs on clay is a different thing from engraving them on stones, and the inventors of the pictographs, after settling in Babylonia, hit upon the method

of emphasizing the beginning of lines by means of wedges, to prevent the obliteration of lines on the soft clay.

In Assyrian inscriptions the signs have become so conventionalized that the original pictograph is rarely recognizable. This is the case in the sign we are considering, whose name is *gešpu*,

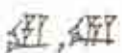

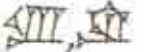
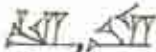







	Neo-Babylonian. Clay's list, No. 166.	500 to 50 B. C.
	Assyrian.	1100 to 650 B. C.
	Kassite. Clay's list, No. 196.	1800 to 1100 B. C.
	First Dynasty of Babylon. Ranke's list, No. 177.	2200 to 1800 B. C.
	Ur Dynasty.	2400 to 2500 B. C.
	Gudea.	2600 B. C.
	On mace-head of Sargon.	2800 B. C.
	Eannatum.	2900 B. C.
	Ur-Nina.	3000 B. C.
	Proto-Elamite. Shell's list, No. 932.	Prehistoric.
	Boomerang.	

FIG. 3.—Development of the sign *gešpu* from the pictograph of a boomerang.

whose values are *ru* and *šub*, and whose meanings point to the boomerang. Cuneiform signs usually have a name, values, and meanings.

Figure 3 shows the development of *gešpu* from the latest back to the earliest times. This makes it clear that the sign could have been originally a picture of a boomerang.

When now we turn to the meanings for this sign, found in various

Assyrian vocabularies and bilinguals that have come to light,¹ we find such as throw, cast, strike, be in violent motion, down, destroy, finish, end, also turn, return, turn aside, separate, decide, portion, a bow, prostrate, overthrow, fall, especially *naparshudu*, to flee, deviate, i. e. to bend in running. As Barton, who thinks the sign had its origin in a bow, remarks, "From an extension of the idea of throwing or casting came the idea of giving," found in such words as *sharagu*, to give. All these meanings can be derived from some phase in the action of a boomerang and its effects, and, when this is considered in connection with the earliest pictographs, the argument seems conclusive. In fact there is no other object conceivable from which all the meanings given could be derived.

In closing, I may say that little conclusive archeological evidence of the existence of the true boomerang in Babylonia has come to light. The object in the hand of Eannatum,² the sickle-like weapons on the shoulders of Ishtar that appear on seals,³ and the weapon of Ramman⁴ on the boundary stones, may, however, be intended as such.

The Sumerians evidently ceased to use the boomerang when they changed from a forest environment, where wood could always be found for making the weapons, to the plains, remote from all forests, in southern Babylonia. When that was we do not know—it was probably not in historic times. One thing is certain from such a sign as *ru*, and that is, that a written language, in this instance, began its process of evolution in prehistoric times.

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¹ Geo. A. Barton. *The Origin and Development of Babylonian Writing*, pt. II, no. 69, p. 34.

² *Stele of Vultures*, illustration in King, *History of Sumer and Akkad*, facing p. 124.

³ *Seals of Ishtar*, in Ward, *Seal Cylinders of Western Asia*, chap. xxv.

⁴ William J. Hinke, *A New Boundary Stone*, fig. 11, no. 16.

THE CIRCULAR KIVAS OF SMALL RUINS IN THE SAN JUAN WATERSHED

By T. MITCHELL PRUDDEN

IN a paper, published in 1903, on *The Prehistoric Ruins of the San Juan Watershed*,¹ the writer called attention to the fact that a large proportion of the smaller house ruins in this region, standing in the open, show a definite and characteristic grouping and association of the pueblo or dwelling, the kiva, and the burial mound. This relationship is so constant, and apparently so significant in the study of certain phases of this primitive culture, that the residential complex was designated the "unit type" of ruin.

It was so called because this type of habitation, with its accessories, not only represents a concrete and simple phase of the ancient house-builder's culture, and records certain dominant social and religious impulses of his time, but also because it finds expression in many of the larger and more complex ruins in this region, which are often, in fact, obvious aggregates of these "units," variously modified to suit the requirements of special situations and environments.

Whether scattered at wide intervals over the piñon- and sage-clad uplands, or grouped in larger and smaller settlements along the meager watercourses or more favorable sags among the hills, these small habitation units consist first of the pueblo or dwelling.

This is most frequently formed of a single or double row of small rooms,—four or five rooms in each row,—or, of a single row, with one or more rooms extending forward at one or both ends, forming a shallow court, almost always facing southward.

Directly in front of the pueblo, close by, and almost invariably to the southward, is a shallow pit or saucer-shaped depression of the ground, whose diameter is somewhat less than the length of the

¹ *American Anthropologist*, N. S., vol. 5, p. 224, 1903.

pueblo, and which is considered by archeologists as marking the site of a ceremonial chamber or kiva.

Finally, still to the southward and commonly close by, is the burial ground, usually distinguishable at sight by the darker color and the texture of the soil, by fragments of pottery, flint chips, charcoal, etc., and often by the type of plants which flourish upon it.

The reason for the maintenance of these three structural features in these primitive dwelling-places has become comprehensible in the light which a study of the modern Pueblo culture has thrown on these earlier related folk. For if these simplest residences be recognized as marking family or clan units, as well as being structural units, the practices and traditions of the Pueblo people of to-day, which center in and are so largely determined by clan or other social relationships, make clear enough the impulse which led small groups of these earlier people, even in the near neighborhood of others, to maintain not only their separate houses, but also their separate ceremonial chambers and places of burial.

But this complex, constituting the simplest residential unit of these prehistoric cliff-dweller-pueblo people, is here and there variously modified, while preserving the characteristic features of the type. Thus two sets of single or double rows of living rooms may be placed end to end, or in longer series. Then, commonly, there is a duplication of the kivas, and sometimes of the burial mounds, corresponding to the increase in the dwellings. Or the wings may be prolonged, or even nearly or completely surround the kiva. Or finally, the latter may be enclosed on the sides and in front by a wall extending from the sides of the pueblo.

These are some of the more common modifications of the primitive type, when standing on unincumbered sites in the open.

The recognition of this simple structural type of ruin has proved useful in the surveys which in later years have been made of the larger and more complicated ruins, especially in this district.

For example, in the great ruin masses in the open country, such as the Aztec Spring ruin at the eastern foot of Ute mountain; the Burkhardt ruin near the head of the Mc Elmo cañon; the Goodman Point and the Yellowjacket Spring ruins, and many others in the

northern San Juan drainage. Most of these, at first sight, seem to be hopelessly confused masses of fallen walls, jumbled chambers, and recklessly scattered courts and kiva sinks; but they at once assume character and meaning when one recognizes them as congeries of more or less modified unit types, crowded on to irregular sites and adapted as best they could be to the exigencies of the conditions and the place.

One of the most striking of these site modifications, in these larger irregular ruins, is in the burial places, which are variously placed, not so constantly to the southward of the pueblo as in the common unit type, often much scattered, and not infrequently still eluding discovery.

In the ruins crowded around the heads of gulches, as in the Cannonball, the Hawberry, and the Ruin Cañon group, and on various branches of Montezuma creek, a similar clue to topography is afforded by the recognition of the unit type in the composition. The ground-plan of the large mesa ruin partially excavated by Kidder in 1908¹ on a short western tributary of Montezuma creek in Utah, shows various forms and combinations of the unit type.

Finally, as Dr Fewkes has shown in the records of his illuminating studies and restorations of the great cliff-houses of the Mesa Verde,² here too the adaptation of the unit type to special exigencies of site is evident, and in the light of the interpretations which his intimate personal knowledge of modern Pueblo life and tradition and ceremony justify, affords clues to the various structural features of these imposing ruins and others of their class, which are interesting and important.

Should it be objected that the expression "adaptation of the unit type" of ruin to more complex sites and structures, assumes, without proving, that the simpler types were necessarily earlier in development; one may accomplish all that it is sought to express on this point in this paper by saying that the structural motive, embodying ceremonial as well as secular impulses, which the simpler

¹ *Amer. Jour. Archaeol.*, 2d ser., Jour. Archaeol. Inst. America, vol. XIV, no. 3, 1910.

² Antiquities of the Mesa Verde National Park: Spruce Tree House, *Bulletin 41*, Bureau of American Ethnology, 1909. Also Cliff Palace, *ibid.*, *Bulletin 51*, 1911.

type of ruins seems to express, appears to have been similar to that manifested by larger communities, but variously modified by the latter, as was inevitable under more complex conditions of the site.

Thus the interesting question whether the simple type of dwelling marks an earlier, a contemporaneous, or a later occupancy of this region than the others, may safely be left to further objective and comparative studies.

During the series of summers which the writer devoted to a survey of the ruins of the San Juan watershed, he was constantly impressed with the fact that the depressions supposed to mark the sites of the ancient kivas (kiva-pits, he has ventured to call them) of the small ruins of the unit type, nowhere in the whole great district revealed surface traces of a wall. Throughout this region, as well as in the drainage of the Little Colorado, where also many ruins of this type are found, these kiva-pits are simple saucer-shaped depressions, lying close in front of the pueblo to the southward and usually occupying the court, when such is formed by projecting wings or by an inclosing wall (pl. 1, 1 and 2). These depressions, or shallow pits, are usually from twenty to thirty feet in diameter and from a few inches to two feet in depth at the center. Infrequently no depression at all is found, but simply a more or less stone-strewn level place.

There are usually a few, sometimes many, trimmed stones, similar to those forming the pueblo, scattered in and about the depressions, and on the side abutting on the pueblo its fallen stones often form a continuous broken slope down well toward the center of the hollow. But these stones, in no single instance coming under the writer's observation, out of nearly a thousand which he has examined in this and other districts, show wall lines conforming in shape and position to the pits.

In the larger and more complex ruins of this district, such as have been named, standing in the open and usually upon rock surfaces, one can often readily discover here and there among the secular rooms, portions of the circular walls of the ceremonial chambers. But these larger ruins are not usually so completely



1. RUIN OF "UNIT TYPE"—SIDE VIEW



2. RUIN OF "UNIT TYPE"—KIVA SITE INCLOSED BY WALL



3. RUIN 1. KIVA SITE IN CENTER OF PICTURE (BEFORE CLEARING)

fallen and weathered into more or less compact and sage-grown heaps of stone, smoothed over and often half-engulfed by the sand-drift, as are commonly the smaller ruins of the unit type built upon the more or less level surfaces of the open ground.

Although in the small ruins of the unit type no walls or other structural features are evident on inspection, the saucer-shaped depressions between the pueblo and the burial mound have been assumed to indicate the site of circular kivas. And this assumption would seem to be justified, in view of the numerous excavations and careful studies which have been made, in recent times, of larger and more complex ruins in this region, which have established certain definite and characteristic structural features of circular kivas, in close and constant relationship to groups of living rooms similar to those clustered about these kiva-pits in the open country.

But the writer is unaware of any record of the excavation of one of these circular depressions in ruins of the uncomplicated unit type in this region or elsewhere; so that their exact nature has been as yet only inferentially indicated, and the definite structural features, if such exist beneath the ground, are still unknown.

The Navaho Indian and the early settlers and present ranch folks are mostly of the firm conviction that these "sinks" were reservoirs for water, of which these early people so obviously stood in need. And without inquiring too closely into the obstacles which the lore of water sources, seepage, and evaporation might offer to a wide appeal for this genial hypothesis, they are disposed to laud the thrift and ingenuity of the erstwhile owners of this arid land.

More seriously one might consider it possible that in such primitive habitations as many of these widely scattered units are, there was no walled structure at all beneath the ground, but that the kiva, on this level or sunken site, might have had the character of the still more primitive pit-dwellings of an earlier day, of which, indeed, in the opinion of most competent investigators in this field, the circular kiva of the cliff-dwellers is presumably a significant survival.¹ In this case the moderate depressions in front of the

¹ See Nordenskiöld, *Cliff Dwellers of the Mesa Verde*, English trans., 1893, p. 168; also Fewkes, *Antiq. of the Mesa Verde Nat. Park: Spruce Tree House*, *Bulletin 41*, Bureau Amer. Ethn., 1909, p. 20.

pueblos might indicate only the sites of such hut-like structures as have marked early phases in the evolution of the house-building art, along many independent lines of its development, in this and other lands.

In view of this lack of positive knowledge of the nature and structure of the alleged kiva-pits in these small ruins of the unit type, it seemed to the writer worth while to make a complete excavation of a characteristic example, and at the same time to obtain such data as might be forthcoming which could throw light on the question of the relationship in period and culture between the builders of these simple isolated dwelling places and those who were led to construct those more complicated and larger communal houses, both in caves and in the open, which stand in close geographical association with them.

RUIN NO. I

The small ruin of the "unit type" which it was decided first to investigate,¹ is one of a little group in the Montezuma valley in southwestern Colorado, near the town of Cortez. This ruin was selected because it lies but a few miles from the great cliff-houses of the Mesa Verde on the east, and only a little farther from the open-country Cannonball ruin to the west, in both of which circular kivas have been excavated and described. Furthermore, both groups of ruins are well known to the writer, as they were before and as they now are, after systematic excavation. Thus it was felt that the study of this small ruin might afford an instructive comparison with the larger and more complex types in the same general district.

This group of ruins lies a few rods to the west of the highway which runs southward from Cortez and crosses the McElmo wash near Mitchell spring. Its exact situation is in the N.E. $\frac{1}{4}$ of the

¹ The writer was assisted in this expedition by Clayton Wetherill, whose wide knowledge of this country and its ruins, and whose unfailing energy and resourcefulness through many seasons of field work in this district have been of the greatest value. To Mr Wetherill and to Mr Henry H. Hun, of the Sheffield Scientific School, Yale University, whose volunteer services were most helpful, the writer wishes to express his sense of obligation.

N.E. $\frac{1}{4}$ of Township 35 N., of Range 16 W. of the New Mexico meridian.

As the McElmo river winds past Mitchell spring, about a mile and a half south of the village of Cortez, it makes a short turn westward between two low rock escarpments, cutting off from the adjacent wooded slope a rock islet, containing some forty acres, which slopes southeastward to the broad "Montezuma valley," facing the ragged western escarpment of the Mesa Verde. This sloping tract is covered, except at its northern end, with several feet of coarse sage-grown arid soil.

On the crown of this knoll, and scattered irregularly down its slope, mostly from one hundred to three hundred feet apart, are several (thirteen well defined) isolated ruins of the unit type. Three of these had three kiva-pits, three had two, and the remainder one each. In three of the units which were nearest together, the burial mounds were merged. In the others they were distinct and in front of the ruins which all faced southeasterly. One of the single kiva ruins was selected for the excavation which it is the chief purpose of this paper to record.

Many other similar ruins, single and in small groups, are scattered over this part of the Montezuma valley. Doubtless Mitchell spring, less than half a mile away, and a never-failing water source, in the earlier as at a later day, fostered settlement in this vicinity.

This group, as well as many other ruins in this region, for more than a quarter of a century has been a favorite resort for those seekers after prehistoric pottery who owe no allegiance to the science of Archeology. In the earlier, pre-irrigation days, it was of no slight importance to the settlers hereabouts to be able to eke out the scanty yield of an unwilling soil by prodding about in these abundant graveyards for the pottery which then, even more than now, had a considerable commercial value. Mr Walters, the former owner of the land on which this group is situated, estimates that the pieces dug out of the mounds of this one group would number not fewer than a thousand.

In the past few years, the mounds being fairly exhausted, the

addresses of the pot-hunters have been largely directed to the little pueblos themselves; and through, in and under the walls and floors of the rooms of some of the houses, as well as in most unlikely places outside, the assiduous marauders have dug and pecked and prodded and destroyed. Only the gentle legend of the reservoir has saved the kiva-pits here, as all over the San Juan district, so that these are everywhere wholly undisturbed. This group of ruins was therefore as well adapted to the writer's purpose as those more inaccessible, which have suffered less at the hands of the destroyer.¹

The general appearance of the ruin selected for special study is seen in plate 1, 3.

The heap of dressed stones which formed the pueblo, facing east of south, rises between three and four feet above the surface of the ground, and is about 50 feet long and 30 feet wide, including the throw of the fallen walls outward. Many of the fallen stones from the pueblo mound lay along the adjacent slope of the kiva-pit. The latter was about 20 feet in diameter, measured from the top of the slopes. The center of the pit was about three feet below the general surface of the ground. Both the kiva-pit and the pueblo mound were sparsely overgrown with sagebrush, greasewood, and other small shrubs.

One of the rear rooms of the pueblo had been roughly cleared by some unknown person, and the stones and debris from this were scattered upon the rest of the mound, mostly on the rear slope. Also the exterior wall of the southwest corner room on the front row had been disturbed by a ragged trench dug outside the limits of the pueblo, apparently in response to the fatuous impulse of some curious treasure seeker. Otherwise this ruin was intact; save for the ravages of the burial mound common to all the units of the group.

THE KIVA

A short trench across the loose stones and soil of the southern border of the kiva-pit revealed, about 18 inches beneath the surface, trimmed stones laid up and facing inward. This proved to be the

¹The present owner of the ranch property on which these ruins lie, Mr Horace G. Husted, generously placed the entire group at my disposal, and I wish to acknowledge his cordial helpfulness throughout our studies here.

outer wall of the deep recess of a typical circular kiva similar in general construction to those kivas which have long been known in the great cliff-houses of the Mesa Verde, and recently more adequately studied and described in detail, and in part restored by Fewkes.¹

It resembled in type also some of the circular kivas, described by Morley, in the Cannonball ruin on a branch of the Yellowjacket,² and some of those examined by Kidder in a large mesa ruin near the head of a small tributary of Montezuma creek in Utah.³

Such kivas are circular-walled chambers with six recesses in the upper portion, separated from one another by six pilasters which rise flush with the lower wall of the chamber. These pilasters originally supported the roof timbers, and the southern recess is commonly deeper than the others.

While this brief and incomplete characterization will for the moment suffice to establish the general relationship of this kiva with others in this district already known, it is necessary, in order to institute a more comprehensive comparison, to describe its contents and to record with more detail some of its other significant structural features.

As it was my purpose, after photographing, to leave the ruin in suitable condition for inspection as an example of the type, all the loose stones and the refuse soil removed from the kiva and from the pueblo were hauled away from the mound.

After the loose surface debris had been disposed of, the contents of the kiva beneath were found so firmly cemented together that it was necessary, all the way to the bottom, to loosen the material with the pick, and, when more care was indicated, with trowel, brushes, and the fingers. A considerable part, perhaps a third of the contents of the kiva, consisted of trimmed stones, fallen in from its walls or roof, and especially on the northern side, from the front walls of the adjacent pueblo. From their position and shape, some

¹ *Antiquities of the Mesa Verde National Park: Spruce Tree House, and Cliff Palace*, op. cit.

² *American Anthropologist*, vol. 10, 1908, p. 596.

³ *Amer. Jour. Archaeology*, 2d ser., *Jour. Archaeol. Inst. Amer.*, vol. 14, no. 3.

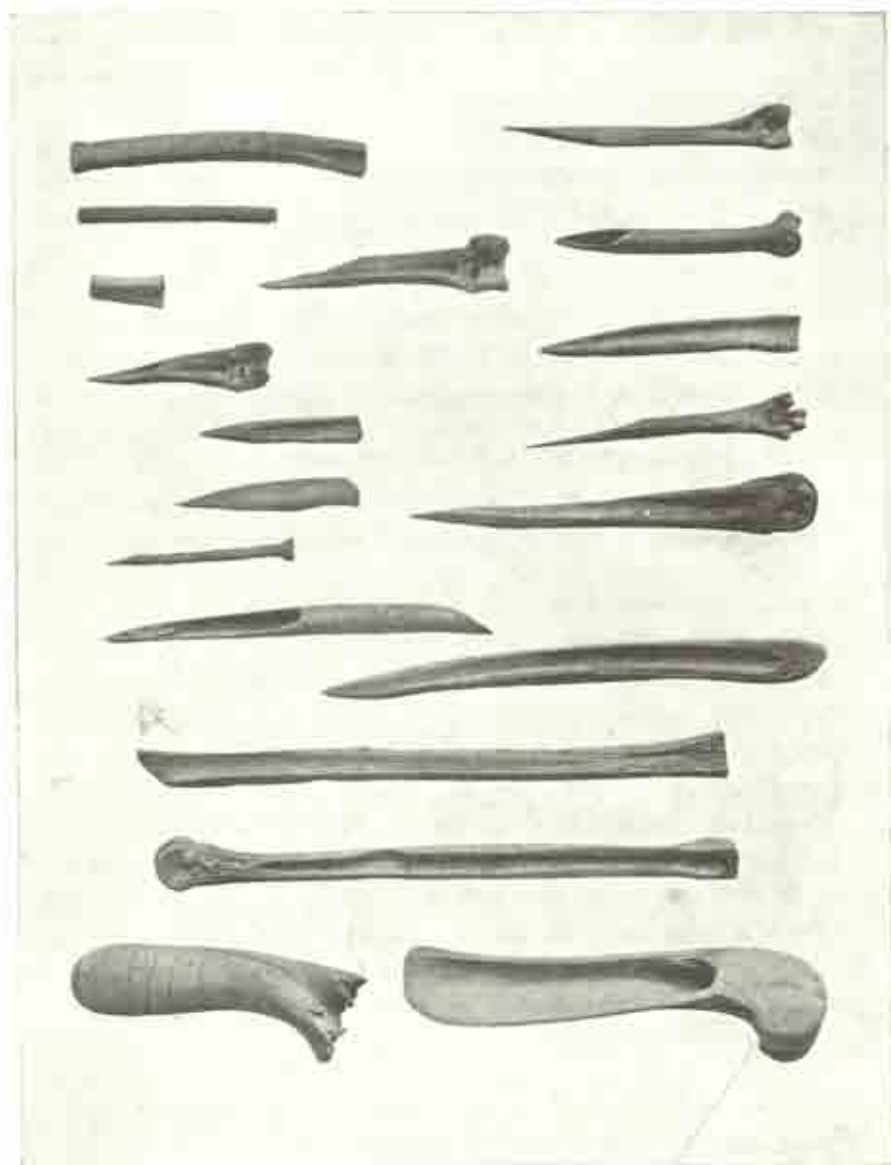
of these stones could be identified as coming from the inner sides of the top courses of the pilasters on which the roof-timbers had rested.

Near the floor, about the center, there were several large flat stones (pl. VI, 2), not belonging in the structure of the walls, which one may conjecture formerly to have been placed upon the roof, as such stones often are on modern pueblo kivas, and to have fallen with it. In two instances there were deep fractured dents in the adobe floor under the corners of these loose flat stones, indicating a considerable fall. A large corrugated pot lay shattered under the edge of one of them.

As the floor level was approached in the clearing, various artifacts were exposed, the location and relationship of which seemed to be without especial significance. There were numerous segments of deer and turkey bones. There were several bone implements (see pl. II)—awls, needles, cylinders, and scrapers. One black polished lignite pendant was found; it measured one by seven-eighths of an inch on the sides, was about one-eighth of an inch thick, and was pierced at one end for suspension.

Of stone implements (see pl. III) there were three roughly fashioned axes (1); one so-called "scraper" (2); one pounding-stone or maul (3), with slight depressions pecked on two sides; two each of roughly formed balls and thick discoidal stones (4); one discoidal and one elongated stone (5), both polished on one side as if used for grinding. Several manos, or hand grinding stones, were found, some blocked out in the rough, others smoothed and showing varying degrees of thinning from wear (pl. IV). There were many fragments of these hand grinding stones in the debris of the kiva, and one small fragment of a metate. There was one small sand-stone block, a little more than an inch square and nearly half an inch thick, with a deep concavity in one side, which was believed to be a small mortar (pl. III, 7). Of stone projectiles, only an arrow-point and a spearhead, both roughly fashioned, were found (pl. III, 6).

The pottery found in the kiva, as well as in the front rooms of the pueblo, was of corrugated and smooth ware; the latter being



BONE IMPLEMENTS FROM RUIN 1

finished mostly in white slip with black decorative designs. Throughout the contents of the kiva were scattered numerous unrelated fragments of both kinds.

Although no whole pieces of pottery were found, either in the kiva or in the secular rooms, and all the remnants were badly shattered, it is deemed desirable, for the purposes of comparative study, to complete this record of one small ruin by a brief description and by photographs of the most noteworthy pieces found in both, in such condition of partial repair as was practicable (pl. v).

At the floor-level of the kiva, on the southwestern side, was a small food bowl, $6\frac{1}{2}$ inches in diameter, white with black parallel linear decoration within, and a linear zigzag outside below the rim. The ware was thick, the edge flat and ornamented with black dots (see pl. v, d).

Also on the floor, near the center of the kiva, were found parts of a large, handsomely decorated jar, about 12 inches in diameter, with broad terraced bands in zigzag around the upper segment, and set in triangular masses of thin parallel lines, and bands of dotted lines (see pl. v, c). This jar has three pairs of holes for suspension in the thick rim, which was recessed within for a cover. Near this was a large bowl, $14\frac{1}{2}$ inches in diameter, thin-walled and well finished, and decorated with spiral figures in bands, with masses of slender parallel lines (pl. v, a). The top of this bowl is gone; it originally had side handles,—both absent,—and several of the fragments of one side had been pierced with holes for mending. Parts of a mug, $3\frac{1}{2}$ inches high, narrower at the top than at the base, with linear decoration (pl. v, c), and fragments of a large corrugated jar were also on the floor.

The above noted specimens of pottery from the kiva are, as will be seen, of the general type characteristic of the San Juan area, in the provisional classification of Fewkes.¹

On the southern side of the kiva, on the floor close beside the wall, was the entire skeleton of an infant, the skull lying northward and the well-preserved bones considerably scattered. Some rabbit

¹ *Bulletin 41, Bureau of American Ethnology*, 1909, p. 34; also *Bulletin 51*, 1911, p. 67.

skeletons, found at the inner ventilator opening, may well have been a later intrusion.

In all parts of the kiva, as the floor was approached, there came to light larger and smaller, usually elongated masses, of reddish very hard adobe mortar, bearing the impress, at the sides, of small sticks and timbers. The rounded parts between these timber marks were heavily smoked and had evidently fallen with the roof.

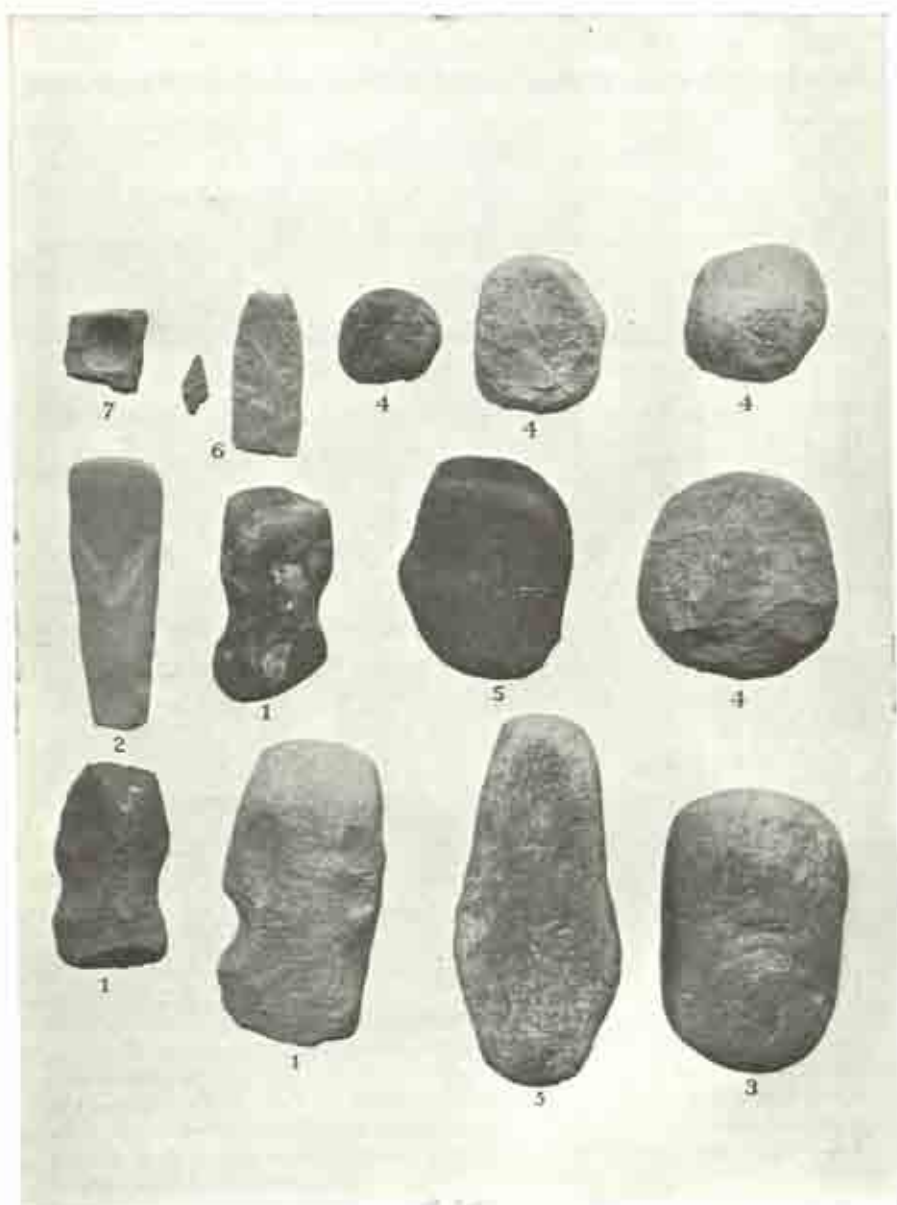
We found a few small fragments of wood, the largest about 4 inches long and an inch thick, among these roof remnants; but they were much decayed, very friable, and largely disintegrated when exposed to the air. These and two fragments of thin strips and the slender lintels and rafters of the ventilator tunnel, presently to be described, were the only vestiges of wood found in the ruin.

The clearing developed the following structural features of the kiva (pl. vi, 1): It was walled throughout with well-trimmed and faced sandstone blocks, such as might readily be obtained from the abundant nearby ledges of the McElmo wash. These stones were laid in adobe mortar, and throughout, in the walls of the recesses as well as below these, they were backed against the densely packed earth.

The kiva was about $13\frac{1}{2}$ feet in internal diameter, having a maximum variation of about 4 inches, in places, from an exact circle. It was $6\frac{1}{2}$ feet in height, from the floor to the level of the top of the pilasters on which the lower roof-timbers had rested. The walls were nearly plumb, showing in general a flare of only about two inches at the top. A sketch of the ground-plan of the kiva and the rest of the ruin is shown in figure 4.

The deeper southern recess was 4 feet 6 inches deep; 5 feet 5 inches wide at its inner edge, flaring to 7 feet at the outer wall. The banquette of this recess was 32 inches above the floor. The five shallow recesses were from 8 to 12 inches deep. The corresponding banquettes, formed of small flat stones set in adobe, were on the average 40 inches above the floor; 5 feet 5 inches long on the inner edge.

Beneath the deep southern recess, at about its middle, is a square-cornered opening in the side wall of the kiva, rising 13 inches



STONE OBJECTS AND IMPLEMENTS FROM RUIN 1

from the floor level, and 13 inches wide (see pl. VI, 2). This opening leads to a tunnel, or flue, of approximately the same size, passing underneath the banquette and sloping slightly upward to its ter-

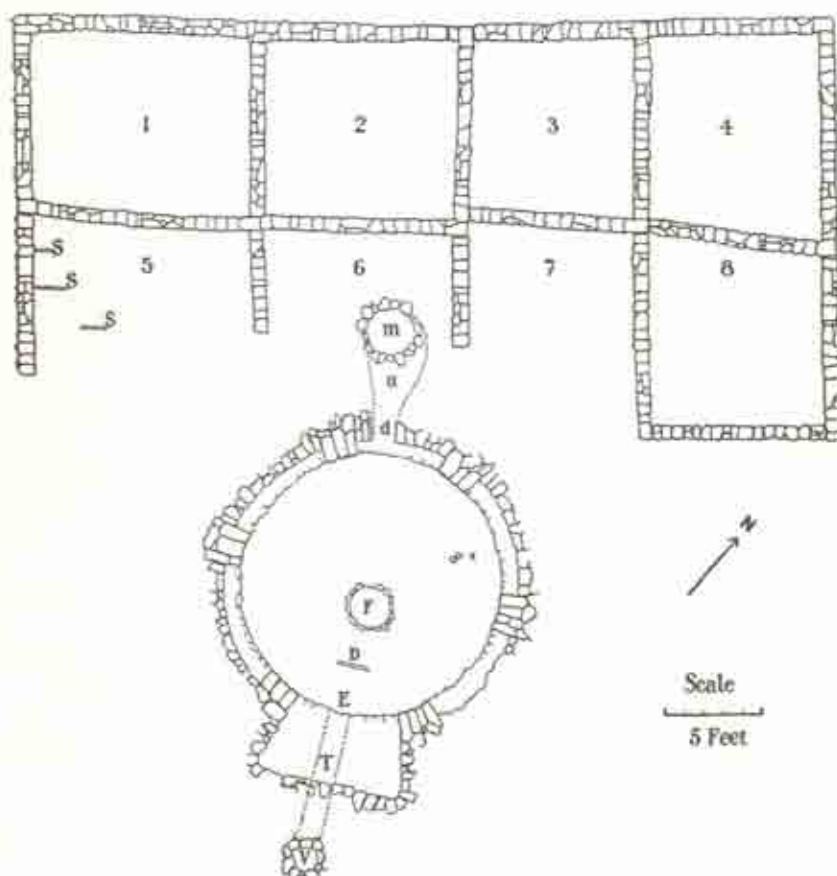


FIG. 4.—Ground-plan of Ruin No. 1.

V, Perpendicular ventilator shaft. T, Horizontal tunnel leading from the ventilator opening, E, at the floor level in the kiva to the upright shaft. D, Deflector, or fire-screen. F, Fire-pit. s, Conjectural sipapu in the floor. d, Doorway at the level of the northern banquette leading from the kiva to the expanded passage, a, opening in the floor of Room 6 by the manhole m. 1-8, Rooms of the pueblo. s, s, Upright slabs set in the floor.

mination in a perpendicular flue of stone, about 15 inches in diameter and circular at its top, rising to the surface of the ground 3 feet 4 inches outside the outer wall of the deep recess (pl. VI, 3).

The floor of the horizontal portion of the tunnel is continuous with the kiva floor and is plastered with adobe. Its sides are formed of the packed earth in which the kiva is sunk, while the top was originally held in place by thin wooden cross-pieces, now largely decayed. The perpendicular portion of the passage is lined with well-laid stones. The number of these stones which had fallen into this, indicate that it had formerly risen some 18 inches above its present top at the surface of the ground. There was no smoke staining of either the tunnel or the flue of the ventilator.

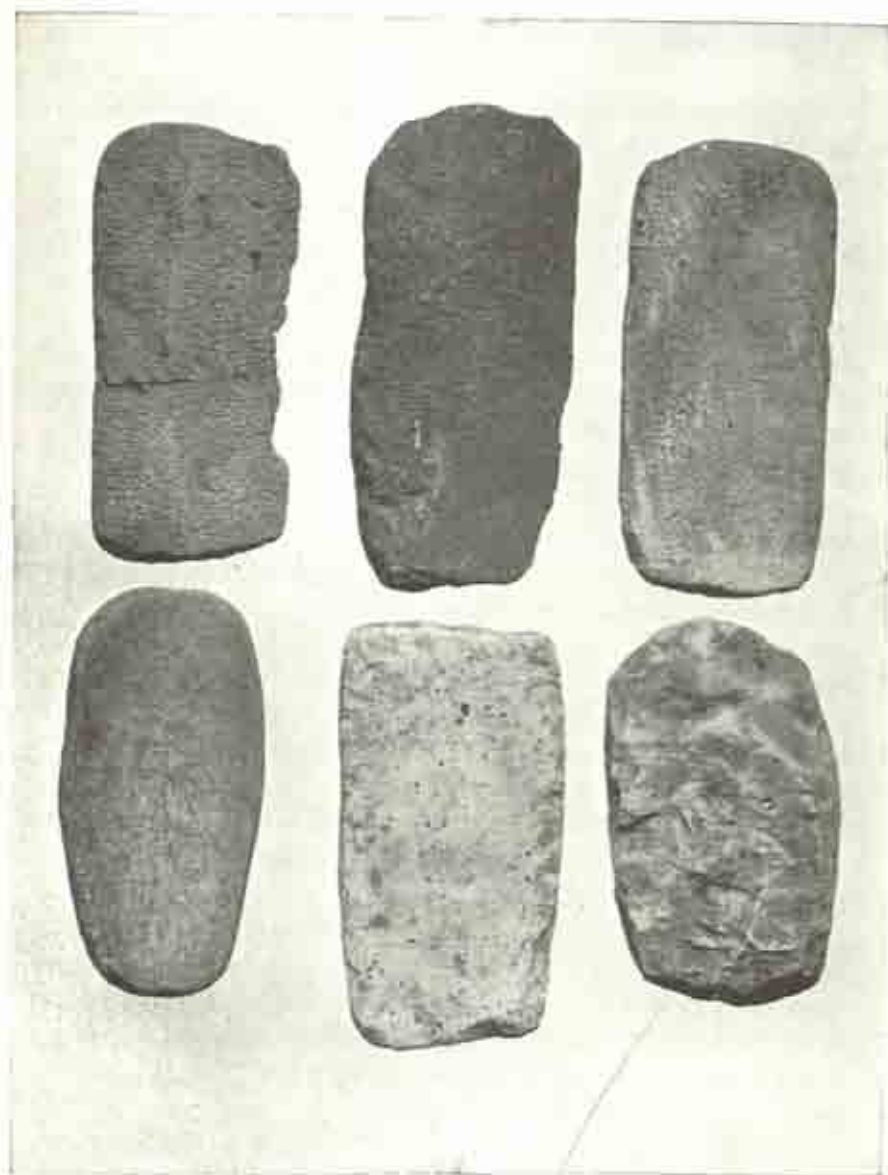
This passage from the kiva to the outside corresponds in all its essential features to structures well known in these ancient circular kivas. They no doubt served, as has been shown by Fewkes,¹ as ventilators for these underground chambers, in which fires were so often burning.

About 30 inches in front of this ventilator opening stands a sandstone slab (pl. VI, 2) firmly set in the adobe floor, its stability further secured by a rough mass of clay banked about its base. This slab, the deflector or fire-screen, serving to shield the fire from the incoming air-current of the ventilator, is rounded at the top, measures about 24 inches high, 22 inches wide at the base, and from 1 to 2¼ inches thick, and is set slightly aslant.

About 18 inches inward from the deflector, toward the center of the kiva, is a circular fire-pit (pl. VI, 2) about 22 inches in diameter and 10 inches deep. This fire-pit is lined with stone and clay, rounded at the bottom, and neatly bordered at its edge by flat stones set in adobe, at the level of the floor plastering. It contained about half a bushel of ashes, among which were numerous fragments of charcoal, some more than three-fourths of an inch in diameter and showing the growth-rings of the wood, indicating that sticks of considerable size, not always twigs, were sometimes burned in the fire-pit.

On the northern wall of the kiva, where it abuts on the pueblo, was a doorway, 14 inches wide, opening from the level of the northern banquette (pl. VI, 1), the exact height of which could not

¹ Ventilators in Ceremonial Rooms. *American Anthropologist*, n. s., vol. X, 1908, p. 385.



HAND GRINDING STONES FROM RUIN 1

be determined because it was caved off at the top;¹ but its height was greater than its width, as judged by a stone slab supporting one side.

A short passage from this doorway, sloping upward under the line of the front wall of the adjacent pueblo, led to an irregular vertical cavity in the earth, bulging out northward to a diameter of about three feet (fig. 4, *a*). At the top of this cavity, and about $4\frac{1}{2}$ feet above its sloping floor, was a stone-lined manhole, some 30 inches in diameter, in the floor of the south middle front room of the pueblo (pl. VI, 3, and fig. 4, *m*). This bulging passageway from the kiva to the pueblo was pecked out of the soil, was without special lining except at its entrances, and was heavily smoke-stained.

In the lower kiva wall, on the pueblo side, are three niches or recesses, of the usual type (pl. VI, 1, and pl. VII, 1). The smaller of these, beneath the northern recess, is about 6 inches square, the others about 9 inches. All of these were filled with sand and contained no artifacts.

There were no marks upon the floor or on the deeper southern banquette which would indicate the resting place of a ladder. Nor was anything found suggesting the position of an entrance, if such there were, to the kiva through the roof.

About 3 feet 6 inches northeasterly from the northern edge of the fire-pit, and about 22 inches from the wall of the kiva, are two circular depressions in the floor (pl. VII, 1). One of these is 3 inches, the other $3\frac{1}{2}$ inches in diameter; each is $1\frac{1}{4}$ inches deep, with smooth symmetrical concave bottom. These pits are made in adobe, similar to that which forms most of the kiva floor, save that here, as in a few other isolated places, in the floor, some whitish chalky material is mixed with the plaster. The floor level hereabouts is otherwise intact and smooth, as are the edges of these openings, except for a slight erosion of the top of the narrow partition between them. A more highly magnified picture of these structures is seen in plate VII, 2.

In no other part of the floor of this kiva was there any other

¹ To prevent the caving in of the debris above this doorway, it was shored up with stones, as is seen in the illustrations.

indication of a sipapu. This symbolic opening from the underworld, which plays so important a part in many ceremonies of some of the modern Pueblo Indians, Dr Fewkes was first to record in the floors of some of the circular kivas of this district, and to interpret, thus developing an important link between the ancient and the modern house-builders.

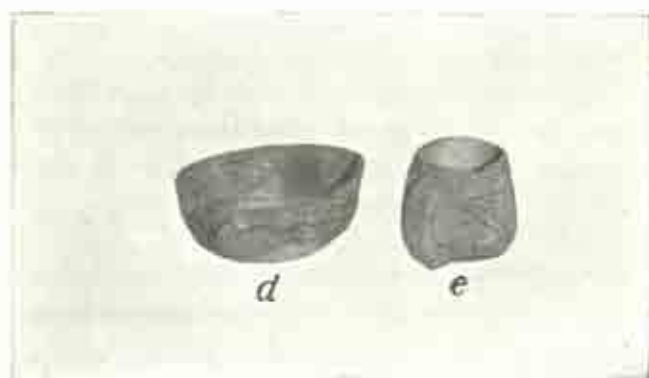
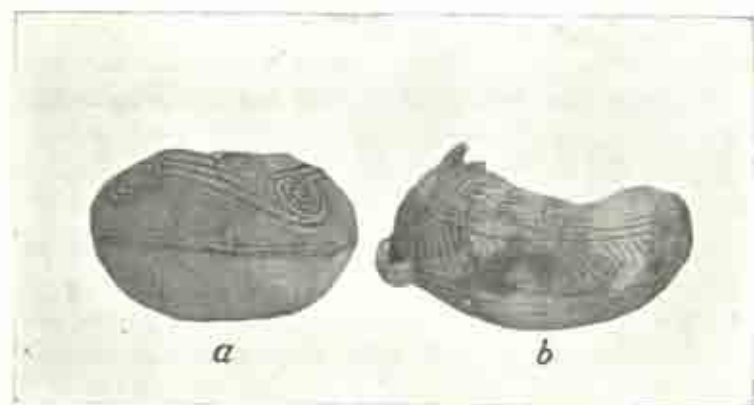
The ancient sipapu commonly consists of a circular hole in the floor, from $2\frac{1}{2}$ to 4 inches in diameter, and from 4 to 10 inches deep; sometimes approximately cylindrical, sometimes bulging out, flask-like, below. The sides are usually plastered with adobe, the edges of the opening rounded, the top segment being occasionally lined with pottery. The sipapu in the old circular kivas is most frequently placed in the segment of the floor between the fire-pit and the adjacent pueblo, and is usually from 2 to 3 feet from the former. It is present in a part only of the excavated kivas of the Spruce Tree House and the Cliff Palace on the Mesa Verde, as recorded by Fewkes, and was found by Morley and by Kidder at the "Cannonball" ruin and on Montezuma creek, respectively.¹

It is not yet quite clear to the writer whether these shallow but evidently carefully fashioned depressions in the floor should be regarded as atypical and unusually placed examples of this significant structure.

The outer wall of the eastern recess and its banquette were caved in. Aside from this the walls of this kiva in general were well preserved, save that the inner layers of stones at the tops of each of the pilasters had fallen forward.

The walls of the kiva were formed of a single thickness of dressed stone, laid in adobe and backing against the soil. Joints in the masonry were not broken, nor were the corners tied. The kiva had apparently been completely plastered within, though the plaster was largely in place only below the level of the banquettes. Here it formed a coating from a quarter to half an inch thick. It was for the greater part gray on the surface, without visible decoration. The fracture, in favorable places, showed many (in one place eighteen) thin bands or streaks—white, brown, yellow, gray, and

¹ Loc. cit.



POTTERY FROM RUIN 1

black—marking successive freshenings of the walls. The plaster crumbled off considerably on exposure to the air and sun.

The floor of the kiva was fairly smooth with adobe plaster, which showed several superimposed layers. In many places on the walls, as on the floor, fine rootlets, probably of the sage, which had penetrated the kiva through the top or through displacements of the masonry, formed a delicate organic pellicle between the stones or plaster and the debris, which in many instances facilitated the separation of the densely packed contents, and assisted in determining and following the level of the floor in clearing.

It would appear, from the height of the undisturbed outward tops of the pilasters, that if the roof of this kiva were constructed in the fashion common to this region,¹ the superimposed timber layers, together with the large mass of roof-mud and stones found fallen within, would have brought the level of the roof, or the roof plaza, to about that of the floors of the front rooms of the pueblo.

It is interesting to note that, from the constructional point of view, the most vulnerable parts of the masonry of this kiva were the upper inner courses of the pilasters. As the flat stones in these situations were rather larger than the average, were not tied, and the joints were not broken, the result would naturally be, as was in fact invariably the case, that when the roof fell in, or afterward in the slow processes of degradation, these front segments slipped away inward, leaving a sloping surface at the tops of the pilasters. The latter surface corresponds to the slope of the surface of the ground which so completely conceals these sole projecting parts of the masonry, after the sand and soil readjustments have filled the pits and smoothed them over into the shallow depressions which we see today. Thus the considerable depth of the wall beneath the surface, the inevitable disintegration of these inner projecting corners of the pilasters, and the inexorable sand-drift which, year after year, molds and remolds the open surfaces of this arid land, abundantly account for the general absence of surface evidence that these kiva-pits conceal elaborate stone structures.

¹ Nordenskiöld, *Cliff Dwellers of the Mesa Verde*, English trans., 1893, p. 57. Fewkes, *Bulletin 41, Bureau of American Ethnology*, p. 19, 1909.

THE PUEBLO

The pueblo of this Ruin No. I is about 42 feet long and 21 feet wide. It is formed (see ground-plan, fig. 4) of two rows of rooms, four rooms in each row. The walls of the back row are now standing about two feet above the surface of the ground. The rooms are, in general, from 8 to 11 feet across, but vary considerably, the two situated westerly on the back being the larger. These two rooms appear to have been built first, for their enclosing walls are continuous; while the masonry of the adjoining rooms in front and beside them is not tied to them but simply abuts upon them. The alignment of the front wall of the back row of rooms is faulty, as is shown in the ground-plan. This fault is obviously in the construction and not due to later shifting of the masonry.

The walls of the pueblo are all rather rough and not so carefully laid as are those of the kiva; those of the northern end being notably inferior to the rest (pl. VI, 3). An estimate of the original height of the walls was secured by piling the fallen stones from a measured section into a compact wall outside. This indicated that the pueblo was not more than one story in height. There was no trace of external doorways or other openings into the pueblo from the back or sides.

The front wall of three of the front tiers of rooms and the adjacent partitions (see pl. VII, 3) had largely fallen, or in the course of time had gradually slipped down into the kiva. The lower tier of stones in the front of the southeast corner room were still in place, showing that the pueblo fronted close upon the adjacent kiva wall.

One of the middle rear rooms had been partially cleared by an unknown treasure seeker, revealing within, walls of roughly dressed and carelessly laid small and irregular stones. The original plastering was mostly absent here, and the mortar largely weathered from between the stones. The three remaining rooms of the back tier were not disturbed, because this did not seem necessary for the purposes of the present study. But what was left of the front rooms was cleared.

In the room (5) lying on the southwestern side (fig. 4) were found



1. NORTHERN SIDE OF KIVA 1



2. SOUTHERN SIDE AND BOTTOM OF KIVA 1, SHOWING VENTILATOR, DEFLECTOR, AND FIREPIT



3. GENERAL VIEW OF RUIN 1 (AFTER CLEARING)

three upright stone slabs (*s, s, s*) set in the floor, or at about the floor level (pl. viii, 1). While such slabs set in the side of a secular room suggest a milling outfit, neither the character nor the relationship of these would seem to justify this interpretation.

In the debris of the front rooms 7 and 8, fig. 4, at the floor level, were found the badly shattered fragments of three large corrugated pots, the largest and most complete of which was $13\frac{1}{2}$ inches high and 15 inches in diameter; also one large smooth white bowl, 15 inches in diameter, with crude linear decorations in black (pl. v, *b*). Here too were found three bone awls, several hand grinding stones, much worn, and numerous fragments of the same.

The manhole leading from the pueblo to the kiva was, as has been indicated (see fig. 4, *m*, and pl. vi, 3) in the floor of room 6, the stoned opening being largely in place. Part of the top course however, as it now stands and is seen in the plate, was laid in by us in order to protect it, from stones recovered from the passage below.

THE BURIAL MOUND

This burying place, lying southeast of the ruin, its nearest border some 20 feet away, measured about 74 feet north and south, by about 55 feet east and west. Though it had been thoroughly ravaged in past years, a strip about four feet wide at the southern side was turned over to determine depth and character of the mound. Parts of four skeletons with many fragments of pottery were found, all much scattered and displaced. One adult skeleton, without trace of the skull, lay in the flexed position, without adjacent pottery. The dark earth of the mound was in some places about one foot deep; in most of the parts examined, however, it was from two to four feet in depth.

The writer was informed by Mr Walters, the former owner of the property, who had been familiar with it since he came with the early settlers into the Montezuma valley, that in early days the search for burials was made only in the mounds by prodding with a sharpened iron rod to discover the location of the flat stones which often covered the bodies. The burials were, he said, sometimes near the surface, sometimes three or four feet deep, and the bodies

were often in the flexed position. The pottery near them was mostly pots and bowls, with few animal forms. Personal ornaments were uncommon.

SUMMARY OF RUIN NO. 1

This study shows that in a characteristic small ruin of the "unit type," one of a group of similar structures in the Montezuma valley, a stone-walled kiva lay beneath the shallow depression, commonly called a "reservoir," in front of the eight-roomed pueblo. That this kiva corresponded closely in structure to the ancient circular kivas already known in more complex and larger ruins of this district; namely to those in the great cliff-houses of the Mesa Verde, in the open ruins of the Yellowjacket group, and on the Montezuma creek drainage. Its size and shape; its six recesses and pilasters; the ventilator, fire-pit, and deflector; the typical niches in the northern wall, and the passageway into one of the living rooms of the adjacent pueblo—all are characteristic of kivas of this type.

The conjectural sipapu, however, differs from the usual type in form and situation, so that definite opinion as to its nature and significance may properly be reserved until further studies of similar ruins shall be made.

Although it was not at this time practicable to undertake the complete excavation of other kiva sites in ruins of this type, it was deemed desirable, by an exploratory trench here and there, to test the presumption that other similar kiva-pits also harbored buried circular recessed walls. The results of these further examinations will now be given in brief.

RUIN NO. II

A small isolated ruin, lying about 80 yards southward from No. I, is an example of a very simple form of this type, having apparently only one large room at the back, with a square-walled enclosure around it and the shallow kiva-pit which lies southward (see pl. 1, 2). A short trench was made across the latter, revealing, about two feet beneath the surface, a circular stone wall, with recesses and pilasters. Beyond the establishment of this point, the excavation here was not pursued.



1. BOTTOM AND NORTHEASTERLY SIDE OF KIVA 1 SHOWING NICHES AND CONJECTURAL SIPAPU



2. CONJECTURAL SIPAPU IN KIVA 1



3. PUEBLO OF RUIN 1 (AFTER CLEARING)

RUIN NO. III

Some 500 yards easterly from Ruin No. I, on the edge of a deep arroyo cut in the alluvial bottom by the flood waters of a short branch of the McElmo, the side of a circular kiva was exposed, to which our attention was called by previous digging at its site.

The pueblo of this kiva had been almost completely washed away in the formation of the arroyo, here about 20 feet deep and nearly 60 feet wide. There was remaining only a small fragment of what appears to be one of the corners, or one of the partition walls of an adjacent pueblo. About 10 feet of the northwestern segment of the kiva had fallen into the arroyo, and with it the corresponding part of the floor. A small portion of the floor farther in, and a narrow strip of the interior of the kiva wall on each side, had been exposed by previous visitors.

Notwithstanding its mutilated condition, we cleared this kiva because it showed on first inspection of its exposed faces some variations in structure which gave promise of interest. It was filled with fallen stones, some of them partly or roughly trimmed, and with much earth, the latter near the bottom being closely packed.

This debris contained few artifacts. There were small fragments of pottery, corrugated and smooth, with black linear decoration; a few hand grinding and pounding stones; a few fragments of turkey bones, and a bone awl.

The cleared kiva is about $12\frac{1}{2}$ feet in average diameter, being however slightly unsymmetrical in contour. It has five remaining shallow stoned recesses, and the absent segment of the wall indicates the former presence of a sixth. The banquette of the southern recess (pl. IX, 2) is $2\frac{1}{2}$ feet above the floor; it is 5 feet wide and 5 inches deep. The other banquettes are about 3 feet above the floor, 3 feet wide, and 4 inches deep.

The tops of the pilasters, which are about 2 feet wide, are now about $4\frac{1}{2}$ feet above the floor, but are considerably disintegrated at the top. The outer walls of the recesses rise to about the level of the pilasters; but in places some of their stones, which were backed against the earth, have loosened and fallen in.

Below the banquettes the kiva wall is formed of the soil of the

alluvial bottom, reinforced here and there, but quite irregularly, by small, variously shaped but mostly flat bits of stone imbedded in the soil usually several inches apart, and forming a rough face on which the plaster is thickly laid (pl. ix, 1). This plaster layer below the banquettes was largely in place, but readily flaked and crumbled off on exposure. It was, on the average, about a quarter of an inch thick, and the fracture sections of the thickest parts showed twelve thin layers, black, white, and reddish brown. In some parts of the lower wall of the kiva the plaster was laid directly upon the earth wall of the excavation, without evidence of any artificial reinforcement or hardening of the latter.

The pilasters were laid up largely with small flat stones, while the backs of the recesses were faced with a single layer of larger rough and often rounded stones, some slightly, others not at all trimmed. The southern, longer banquette was surfaced with small flat stones set in adobe; the four others were plastered directly upon the earth. While the walls above the benches had been plastered, the coating was in most places loose, and in many sections had already peeled off and become merged in the debris.

Beneath the longer, southern recess, at the floor level, is a square opening (pl. ix, 2) 12 inches wide and 16 inches high. This was supported at the top by a much-decayed wooden slab, and led to a horizontal tunnel of about the same size as the opening, and without evidence of supporting walls other than the packed earth about it. This tunnel was followed for about 18 inches from the inner surface of the kiva wall, where all trace of it was lost. Beyond this point we found nothing indicating a perpendicular flue. But just southward of the kiva, and close to it, runs a shallow wash or sag whose bottom, it is evident, must be occasionally aflood, and has probably many times been washed out and reformed. It is therefore not surprising that a ventilator tunnel could not be followed far outside the kiva wall, nor a perpendicular flue, should such have once existed, be disclosed.

About 3 feet 4 inches in front of the ventilator opening was a rough, rather irregular wall of stones (pl. ix, 2), about 10 inches in height and thickness, and 18 inches wide. These stones were closely



1. UPRIGHT STONE SLABS IN ROOM 5, RUIN 1.



2. STONE AND ADOBE BOXES IN FLOOR OF KIVA III.

but irregularly piled together, and a line of similar crudely trimmed stones lay between this pile and the western side of the ventilator opening. These stones did not appear to have been placed in mortar, and if laid at all were roughly set; so that I was in the end not able to decide whether they were remnants of a masonry deflector or had fallen there in the disintegration of the kiva.

Still farther inward, 4 feet from the ventilator opening and near the center of the kiva floor, is a fire-pit (pl. IX, 2), 18 by 20 inches across at the opening, and 12 inches deep. The northern and southern sides of this were formed by flat stones set edgewise and sunk to nearly the level of the floor. The other, sloping sides of the fire-pit were formed of adobe mortar continuous at the sides with the plastering of the floor. The stones were much smoked and the pit contained a small quantity of ashes. Altogether it was crudely fashioned, the southerly slab being several inches longer than the other, giving an unsymmetrical opening.

On the westerly side of the kiva floor, about 4 inches from the wall, were two shallow inclosures, or boxes (pl. VIII, 2; IX, 2), built up of flat smooth stones, set edgewise, and adobe mortar. One was about 13 by 8 inches across, the other 13 by 11 inches. Both were about 7 inches deep, their bottoms, formed of adobe, being at about the level of the kiva floor. These small inclosures were set nearly parallel with the kiva wall, but at a slight angle with each other. The four-inch space between these boxes and the wall of the kiva was nearly filled with mortar, as was the space between them. The flat stones forming parts of the sides of the boxes were from 1 to 1½ inches thick, while the parts formed by adobe were thicker, sloping outside to the level of the floor. On both sides of these structures were rough masses of a mixture of clay and adobe, piled upon the floor against them.

The writer has no clue as to the nature and use of these objects built into the floor of this kiva, which was roughly plastered with adobe.

No sipapu was found; but it should be remembered that about one-third of the northerly segment of the floor had gone down the arroyo, or had been "investigated" by our predecessors in the field.

SUMMARY OF RUIN NO. III

It may safely be assumed that a pueblo was originally placed beside this kiva, though only a fragment of wall remains. And judging from the situation of the ruin among several others still *in situ*, scattered about this bottom land and in the group near by, it was probably of the unit type.

While the study of this kiva was necessarily incomplete, owing to its demoralized condition, it presents several exceptional features which appear to be noteworthy.

In the first place it differs from the completely excavated kiva, above described, in the crude character of its construction. The absence of a stoned wall in the lower segment of the chamber, and the plastering directly upon the earth, while the recesses and pilasters above are regularly stoned, are interesting variants.¹

Again, while the southern recess is marked by a longer arc than are the others, it is also shallow and not much deeper, as is commonly the case in these circular kivas. Finally, the curious stone and adobe boxes set in the western floor are quite exceptional.

RUIN NO. IV

We now repaired to the high mesas north of the McElmo, some 35 miles westward, where we purposed to examine one small ruin of the unit type in a district more remote from the Mesa Verde, and where they are scattered at wider intervals in what seems to-day a less favorable environment—situations, in other words, which would lend to such dwellings rather the character of solitary and perhaps more primitive ranch-houses than of village homes.

We selected for our purpose a small ruin standing with one other about a hundred yards from it, on the Cohon mesa, near the head of a small eastern tributary of Cross cañon.²

¹ Kidder found in certain circular kivas in the Montezuma Creek region, that the lower part of the chambers and the pilasters were stoned and plastered, but that the backs of the recesses were formed by plastering directly upon the baked and hardened earth. *Jour. Archaeol. Inst. Amer.*, vol. XIV, no. 3, 1910.

² This ruin is close to the new road to Bluff City, which leaves the Dolores-Monticello highway near the head of Sandstone cañon, and is less than half a mile from the so-called "Picket corral."



1. PILASTERS AND BANQUETTES OF KIVA III, SHOWING PLASTERING OF LOWER PORTION DIRECTLY ON THE EARTHEN WALL



2. VENTILATOR, DEFLECTOR (1), FIREPIT, AND BOXES IN FLOOR OF KIVA III

The ruin is of the double unit type, and apparently characteristic, save for a series of low walls radiating from the back of the pueblo, and similar walls forming an open court to the kivas in front.

The pueblo was 36 feet long, 17 feet wide, with two rows of rooms, and faced south. The kiva-pit which we examined lay as usual southward of the pueblo; it was about 3 feet deep at its center, with no visible trace of a circular wall. The time at our disposal permitted only partial excavation.

We found buried, about a foot below the surface of the ground, a walled circular kiva, about $16\frac{1}{2}$ feet in diameter, with the pilasters and the backs of the recesses, as well as the banquettes, formed of large, roughly-dressed sandstone blocks, such as might readily have been procured at the edge of the nearby cañon.

The southerly recess was 3 feet 8 inches deep and 7 feet wide. The northerly recess, lying close against the front wall of the pueblo, was 15 inches deep and 6 feet wide, with remnants of plaster upon its ends and back and banquette. The sides of one end of this alcove were much smoked, and a mass of charred fibers and charcoal lay upon the bench with smoked masses of adobe plaster, apparently fallen from the roof.

From the level of the northern banquette, and about midway between its adjacent pilasters, a door 2 feet wide led into a sloping passage opening in the floor of one of the front rooms of the pueblo, about 5 feet from the kiva doorway. The sides of this passage were stoned for 18 inches from the kiva entrance. The top of the door and the roof of the passage had caved in.

The faces of the pilasters, four of which only were exposed, were about 30 inches wide, and the front stones of their upper layers had slipped forward into the kiva.

Only a few fragments of pottery were found in working down to the level of the benches. These were corrugated and smooth white ware with mostly linear decorations in black. The burial mound had been extensively ravaged.

We did not have time to go below the level of the benches, but this preliminary study of the Cohon Mesa mound shows that here,

too, a ruin of the unit type had a buried stone-walled kiva, with recesses, pilasters, and a pueblo entrance, which, so far as they were unearthed, were typical of the ancient circular kivas.

GENERAL SUMMARY

This record of the study of the kiva-pits of four small ruins of the unit type in the San Juan watershed,—one completely and the others partially excavated,—shows that they all covered subterranean circular stone-walled and recessed kivas, and that the one fully examined conforms in most of its structural features to those typical circular kivas of larger ruins now known in this district, namely, pilasters, recesses, ventilator, deflector, fire-pit, niches, and door and passage into the adjacent pueblo.

While it is desirable to obtain further data bearing on the details of structure of ruins of this type, it is clear from the studies here recorded that the builder of these primitive dwelling places in the open country was not less skilful in masonry, and not less punctilious in his devotion to his traditions and his ceremonies, than was the builder of the larger defensible structures in similar localities, or those who left the still more imposing ruins in the cliffs. Whether these were contemporaries or not will remain an open question until more data shall be obtained and interpreted in the light of the vanishing lore of the modern Pueblo Indians.

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PORTRAITURE AMONG THE NORTH PACIFIC COAST TRIBES

By GEORGE T. EMMONS

THE distinguishing feature of the old villages of the Indians of the Northwest Coast was the wealth of ornamentation in carving and painting, totemic or emblematic in character, that covered the house fronts, heraldic and mortuary columns, ceremonial dress, personal ornaments, and war, hunting, fishing, and household implements. This ornamentation did not arise from mere love of ostentation, but owed its origin to the peculiar social organization and semi-religious worship of ancestry that controlled every action of the people and manifested itself in the display of the crest and the respect paid to it. The clan was the bond of union that held all together as the nearest blood relations, so its honor and rights were jealously guarded to that degree that life was freely sacrificed in its behalf. Among a highly sensitive, vain and proud people it is not difficult to understand how each clan would try to outdo its neighbors in material display, and the competition thus engendered stimulated artists and produced artisans whose originality of design and skilful handiwork may still be seen in the moss-covered carvings in the abandoned villages and in our museum collections.

Under such conditions it might reasonably be expected that from conventionalized human forms representing prominent chiefs a demand for and a desire to produce their actual likenesses as portrait busts or statues would arise, and this is confirmed by the following stories. Dr J. R. Swanton, in his *Tlingit Myths and Texts*,¹ tells of "The Image That Came to Life," as follows:

"A young chief on the Queen Charlotte Islands married, and soon afterwards his wife fell ill. Then he sent around everywhere for the very best shamans. If there were a very fine shaman at a certain village

¹ Bulletin 30, Bureau of American Ethnology.

he would send a canoe there to bring him. None of them could help her, however, and after she had been sick for a very long time she died.

"Now the young chief felt very badly over the loss of his wife. He went from place to place after the best carvers in order to have them carve an image of his wife, but no one could make anything to look like her. All this time there was a carver in his own village who could carve much better than all the others. This man met him one day and said, 'You are going from village to village to have wood carved like your wife's face, and you can not find anyone to do it, can you? I have seen your wife a great deal walking along with you. I have never studied her face with the idea that you might want some one to carve it, but I am going to try if you will allow me.'

"Then the carver went after a piece of red cedar and began working upon it. When he was through, he went to the young chief and said, 'Now you can come along and look at it.' He had dressed it just as he used to see the young woman dressed. So the chief went with him, and, when he got inside, he saw his dead wife sitting there just as she used to look. This made him very happy, and he took it home. Then he asked the carver, 'What do I owe you for making this?' and he replied, 'Do as you please about it.' The carver had felt sorry to see how this chief was mourning for his wife, so he said, 'It is because I felt badly for you that I made that. So don't pay me too much for it.' He paid the carver very well, however, both in slaves and in goods.

"Now the chief dressed this image in his wife's clothes, and her marten-skin robe. He felt that his wife had come back to him and treated the image just like her. One day, while he sat mourning very close to the image, he felt it move. His wife had also been very fond of him. At first he thought that the movement was only his imagination, yet he examined it every day, for he thought that at some time it would come to life. When he ate he always had the image close to him.

"After a while the whole village learned that he had this image and all came in to see it. Many could not believe that it was not the woman herself until they had examined it closely.

"One day, after the chief had had it for a long, long time, he examined the body and found it just like that of a human being. Still, although it was alive, it could not move or speak. Some time later, however, the image gave forth a sound from its chest like that of crackling wood, and the man knew that it was ill. When he had some one move it away from the place where it had been sitting they found a small red-cedar tree growing there on top of the flooring. They left it until it

grew to be very large, and it is because of this that cedars on the Queen Charlotte islands are so good. When people up this way look for red cedars and find a good one, they say, 'This looks like the baby of the chief's wife.'

"Every day the image of the young woman grew more like a human being, and, when they heard the story, people from villages far and near came in to look at it and at the young cedar tree growing there, at which they were very much astonished. The woman moved around very little and never got to talk, but her husband dreamed what she wanted to tell him. It was through his dreams that he knew she was talking to him."

"Father" Duncan tells the following story of "The Man With The Wooden Wife":

"At the old Tsimshian winter village of Metlakatla there lived, long ago, a man and his childless wife, who were greatly attached to each other. The husband went hunting for several days, and returning at night he found his wife sitting by the fire, which had burned low. He spoke to her, but received no reply, and when he spoke again she seemed to turn away without answering. Such conduct could only mean that in his absence she had wronged him, so he left the house, launched his canoe, and camped on the opposite shore. In the morning, as he was returning to the village, he met a canoe, and the occupants told him that his wife had died and had been cremated the evening before, so then he knew that it was only her spirit that he had seen the previous evening. He felt very sad, and wishing to remember her always as she was, he carved her image in wood with great truthfulness of features and clothed it as she had last appeared to him seated by the fire, and wherever he went in his canoe he carried it with him."

Before the advent of Europeans, when the natives had only tools of stone and shell, any such refined work as portraiture must have been too difficult of accomplishment to have proved satisfactory, but with the acquisition of iron, latent talent rapidly developed and the Victorian age of this coast was about the middle of the nineteenth century, before the contaminating influences of civilization and commercialism had paralyzed native art and artisanship. The work of this early period in wood, ivory, bone, and metal shows originality of design and accuracy of detail, but it gradually disappeared with the establishment of the Hudson's Bay Company factories and the independent trading posts along the coast, which

resulted in such strong competition in the fur-trade that the natives became independently well off, and in the comparative cheapness of our commercial products they neglected home manufactures. Following the trader came the missionary, who discouraged all social and shamanistic observances and abolished ceremonial paraphernalia. Finally the exploiting of the salmon industry and the establishment of the numerous canneries gave congenial work and a living wage to all, and taught them the value of time and modern methods, but, unfortunately, brought liquor and disease which have crippled them physically, morally, and mentally, destroying their ambition and decimating their ranks.

The accompanying illustration (fig. 5) shows, in the old and generally deserted Kitikshan village of Kitwankool, on the trail leading from Kitwanger on the Skeena to Kitlaghdamokx on the Nass, in British Columbia, what is possibly the best remaining example of a portrait figure. It consists of a comparatively rude body of wood, to which the limbs are joined by wooden dowel-pins and which in turn are jointed at the knees and elbows, so that the figure can be placed in a sitting posture and the arms arranged at will. The feet and hands are carved in one with the tibiae and forearms. As the figure was fully clothed, the limbs are simply proportional in size, with little regard for exactness of form. The whole skill of the artist was expended on the features and expression to make them as lifelike as possible. A glance at the illustration will show with what success this was accomplished, while a comparison with the carved human faces in the rear of and above the image will show the great difference between the portrait face and the conventionalized human face of the totem-pole. The image is seated on an old trunk, which is secured, at an elevation of ten feet above the ground, to a totem-pole. The trunk contains the cremated remains of the deceased whose image is shown, and this with the figure was once partly protected by a shelter above and at each side, of which a portion only remains. Originally the figure was clothed, but time and the elements have left only shreds of the body-covering, head-dress, and ceremonial neck-ring of cedar-bark rope. As the face indicates, the deceased was a young man.

He was of the Kon-nah-da clan of the higher class, and in this manner his memory was preserved.

At the Kitikshan village of old Kitzegukela on Skeena river, about thirteen miles below Hazelton, in a typical small wooden



FIG. 5.—Effigy of a young man seated on a box containing the cremated remains of the deceased at Kitwankool, British Columbia.

grave-house, is a most lifelike image of a man who committed suicide. The body of the figure is completely clothed and has a cap on the head; it is seated in a chair on the box that contains the

cremated remains. In the right hand, with butt resting on the floor, is an old type of Hudson's Bay Company's musket; in the left hand, extended, were the bullets with which he shot himself. The carved face of cedar, which has weathered to a light-brown shade approximating the complexion of the people, is so lifelike and the pose of the figure so natural that on seeing it suddenly through the small window of the house one instinctively draws back in surprise, thinking that it is a lifeless body exposed to view.

In the Nishkar village of Aiyansh, on Nass river, I was shown a wooden figure, rude in body, with jointed limbs, but expressive in features, similar to the two figures seen among the Kitikshan. This was not exposed as a grave figure, although it might originally have been made for that purpose. The family in whose possession it was, said that it represented a chief who had been killed by the Haida about four generations before, and that at family feasts it was exhibited clothed, in memory of the dead.

These three portrait busts or images are all that I found among the Kitikshan and the Nishkar, although the people told me that some years ago there were two similar figures placed on posts, one on the old trail from Kitwankool to Nass river, and the other on the trail between Hazelton and Kisgagass, at the mouth of Babine river, at points where men had died on the trail and had been cremated.

These figures are called *kitumghun*, "man of wood," and were rare on account of their expense. They were always made with jointed limbs, so that they could be placed in different positions, but, so far as I know, were always seated. In some instances the hair of the deceased was cut off and locks thereof inserted and pegged into small holes in the head of wood. While the Tsimshian are said to have possessed such figures, no sign of them remains, as these people have wholly abandoned their primitive mode of life.

From an experience of twenty-five years among the Tlingit of Alaska I have found no evidence that this custom ever existed among them, though they placed figures of human form, representing spirits, in proximity to the grave-houses of the shamans to guard them from evil. The most realistic handiwork of the Tlingit is shown in the masks of the shaman that express sex, age, pain,

death, and many emotions with wonderful fidelity. But while the artist in his conception must have had individual faces in mind, as they too were supposed to represent spirits seen only in dreams of the practitioner, they could not be accounted as likenesses.

So far as the Haida are concerned, neither Dr Swanton nor Dr Newcombe of Victoria, who are the leading authorities on this people and the Queen Charlotte islanders, have any knowledge of separate portrait figures like those found on the Skeena and Nass rivers, except in one instance, cited by Dr Newcombe, where a chief of the village of Skidegate, on Graham island, when visiting Victoria, about 1870, was arrested, imprisoned, and fined for disorderly conduct when under the influence of liquor. Returning home, smarting under the disgrace of confinement and the pecuniary loss sustained, he conceived the idea of humiliating the court by having the image of the judge carved and placed on one of his house-posts and that of the clerk of the court on



FIG. 6.—Ceremonial head-dress mask representing the bust of the deceased daughter of a Haida chief.

the other, so that when he or his friends passed they would speak to the figures in derision and make insulting remarks about those they were designed to represent. This, according to native law, removed the disgrace from the owner's shoulders and subjected the court to ridicule. Whether or not these figures expressed exactness of feature, I cannot say. Unquestionably they were made as nearly recognizable as possible, and I understand that they exhibited a striking resem-

blance, but their identification was made more certain by the carved drapery representing the long black frock-coat and high hat of the judge, and the peaked cap of the clerk.



FIG. 7.—Skoolkah's house and totem-pole,
Howkan, Alaska, 1888.

Possible instances in two carved wood head-dress masks in the United States National Museum show female faces wonderfully realistic and individual in feature and expression. Both of these are of Haida workmanship. One (fig. 6) presents the bust of a young girl naturally posed and dressed in the style of a generation ago; it is said to represent the favorite daughter of a Haida chief whose untimely death so saddened the father that he had her image carved in this manner in order that he might wear it on ceremonial occasions on the front of his head-dress. The other mask (pl. x), which is attached to the ceremonial head-dress, presents likewise the face of a young girl, named Soodatl, the daughter of a Skidegate

chief. The face is ornamentally inlaid with small rectangles of the much-prized blue-green *haliotis* shell in imitation of the old custom, which prevailed among the higher classes, of sticking on the face, with spruce-gum, such small sections of this shell. These two carvings occurring on this type of family head-dress are remarkable, as the ornamentation of the wooden mask is invariably



PORTRAIT MASK OF SODATL, DAUGHTER OF A SKIDEGATE CHIEF

totemic in character, representing the clan crest and generally in animal design.

The many human figures that appear on totem-poles, mortuary columns, and house-posts must be wholly dissociated from portrait figures. These, whether representing mythical heroes or individuals known to the villagers at the time of their execution, are conventionalized forms, and while typically correct are expressionless and show no attempt to specialize particular features. Their identification or recognition depends wholly on their position, context, or association with crest or other figures.

In the Haida village of Howkan, on Prince of Wales Island, is still preserved the totem-pole of Chief Skoolkah, upon which is represented the uniformed figure, with a long beard, of a military official of Sitka who had extended some kindness to a former member of this family (fig. 7). The beard and uniform identify the white man and the official. No attempt at a likeness could have been attempted, as the artist, who lived at a later period, could hardly have seen his subject.

In painting and weaving portraiture was never attempted by the Northwest Coast tribes. Foreshortening and shading were neither understood nor practised, and human figures were seldom employed except as grotesque forms on the shaman's dress. Animal forms predominated and were either realistic in outline or else highly conventionalized, exaggerated, dissected, or separated to that degree that they are unintelligible to the present generation.

NOTES ON THE PLAINS CREE

By ALANSON SKINNER

THE following data on the Plains Cree were gathered during June, 1913, on the Keewistaihu reserve and adjacent reservations under the Round Lake agency, Saskatchewan. The writer's object in visiting this, one of the more easterly bands of Plains Cree, was to obtain information on their military organization for the American Museum of Natural History. The notes here presented were taken during lulls in the regular work, which was itself carried on vicariously, owing to the exceedingly restless habits of the Cree, who could not be induced to refrain from roving about. The rest of the material collected, including a brief description of the Sun dance and about a score of myths and stories, mainly concerning the culture hero, will some time be published by the American Museum of Natural History. As the writer does not expect to go among the Plains Cree again, at least in the near future, these notes are offered with the permission of the Museum merely that they may be placed on record, as even brief and fragmentary information often proves of value to the student.

The principal informants were Four Clouds, Spotted One, Assiniboine, God's Head, God's Child, Neil Sâwûstim, and Jacob and Andrew Bear. The Miss Paget referred to is Amelia M. Paget, author of *People of the Plains*.

Giving of Names.—While a child is still young it is customary for the parents to call upon four old men and to ask them to give it a name. This is done when the child is about one year old. The parents gather a quantity of clothing and other presents, and a lot of food; then four old men, whom the parents have selected because of their fame for powerful dreams and for their war exploits, are invited by a runner who bears them tobacco and a pipe. Each tries to dream from then on, and when the appointed day arrives, the four men appear at the spot designated, where the parents have

prepared a feast and where other guests are assembled. When all is in readiness, a pipe is filled and given to the spokesman of the elders, who rises and addresses the people. He tells them of whom or what he has been dreaming, and gives the infant a name that has some reference to his visions or to one of his adventures in war. He then turns to his three assistants and afterward to the people in general, asking each to repeat the name aloud and to call upon the namer's dream guardian to bless the child.

After this there is a feast, for which each person has brought his or her own dish and spoon. Any of the viands that cannot be eaten are taken home by the guests, as they are partly sacred and may not be thrown away.

In former times it was taboo to ask a man directly for his name, although it is now done very freely. The only time a man ever mentioned his own name was when he had done a brave deed. On such an occasion he might repeat the story of his exploit to his friends, crying, for instance, "I am Kiwistahau, and that is the way I am accustomed to do!"

Sometimes a child was sickly, and the doctor on investigation would dream that it was wrongly named, and prescribe a change. If the diagnosis was correct, the child would recover in from a day to four days, and all was well.

In *People of the Plains* (pp. 9-12) Miss Paget gives some data on naming customs which I could not get corroborated at the Crooked Lake reserves, but which seem to refer to the Saulteaux, and not to the Cree.

Menstrual Taboo.—The law insisting on the isolation of women during their monthly periods is by no means so strong among the Plains Cree, or among the Saulteaux for that matter, as among the Central Algonkin. When a girl undergoes her first menses she is tabooed from society for a period of ten days. During subsequent menstrual periods she is not obliged to leave the family lodge, but only to eat from her own dishes and spoons during this time, except in the case of those who are the wives of the keepers of important medicines. Such women are obliged to camp by themselves.

Menstruating women might not scratch their heads save with a stick. They wore their hair loose and were forbidden to comb it or to wash for four days. Four Clouds knew of one man who for some reason had a personal taboo against head-scratching with his fingers, and always carried a stick for the purpose.

Dream Fasting.—When a child, regardless of sex, approaches or reaches the age of puberty, it is given a course of training to inure it to the hardships of the puberty fast. The youngster is made to



FIG. 8.—Cree tipis, one showing anthropomorphic thunderbird, the dream guardian of the owner. Ceremonial lodge frame at the left.

take off all his clothing and wander naked in the bush without food or drink for a period of from one day to two days, and so on. When the time is come he is sent out naked into the bush; in the case of boys the entire body is painted white, or the face only is daubed with yellow ochre. The child is expected to build a little shelter of boughs, and there to await a dream of revelation.

These dreams, it is said, are about animals of any sort, rather than about the gods, as among the Menomini, but owing to a strict taboo against telling these dreams which prevails among the Plains

Cree, as well as among the members of the eastern division of that people, no examples were collected. The Plains Cree men were accustomed to fast a number of times during their lives for further revelation. These fasts sometimes lasted as long as ten days.

Four Clouds said that the first time his father was put to the test in his early training before the great fast, his grandfather sent one of the old men of the band a pipe and some goods which he requested the old man to "throw away". The ancient assented and accepted the pipe to pray for the lad. Four Cloud's grandfather then stripped the boy, although it was in midwinter, painted him from head to foot with white clay, and sent him to the top of a high hill. The little fellow stayed out some time but felt the cold only a very little. When he returned the old man to whom the presents had been given smoked a prayer to the gods.

The Plains Cree calls his dream guardian his "grandfather" and paints it on his tent more prominently than anything else. Judging by the figures seen on tipis, the Thunder, in semi-human or entirely bird form, is an object frequently dreamed of (fig. 8). Sexual intercourse is forbidden to anyone prior to attempting to dream, either before the puberty fast or later in life, and it is also tabooed to those about to attend a ceremony or go to war. Sacrifices of valuables are made to dream guardians to secure their good will (fig. 9).

Marriage Customs.—With one exception all the Indians inter-



FIG. 9.—A sacrifice of blankets, broadcloth, etc., to a man's guardian spirit.

viewed said that there were no marital restrictions, except for members of the immediate family closer than what we call first cousins. Neil Sâwûstim alone declared that in ancient times the bands were exogamous, at least as a rule. Attempts to find the truth by collecting data on individual marriages failed to show anything worthy of note, for the Cree have not followed any such rule from the time they began to live on reserves thirty or more years ago; and in the majority of cases the old men have younger wives taken from their own bands since they have lived on the reserve. Four Clouds' wife came from another reserve, but the occasion was quite by accident; he happened to meet her while visiting there. Inasmuch as the Plains Cree deny that they have the gentile system in any form, although recognizing its existence among the Saulteaux, it seems possible that there may never have been any definite marriage restrictions. Polygyny was practised, but has long been given up. Four Clouds' father had seven wives.

The marriage procedure was simple—a youth simply asked the girl's father for her, or a man desiring to have a youth for his son-in-law would send his daughter to the young man's tipi with a suit of clothes of her own make. There was no feast or further ceremony. A man went to live with his parents-in-law after marriage.

If a man murdered his wife through jealousy, as sometimes happened, he had to pay eight horses to his wife's relatives, or, if he could not afford this, he might flee alone on the warpath, kill one of the foe, and return to paint the faces of his parents-in-law with charcoal. They might then spare him. Eight horses, or an enemy's scalp, constituted the usual blood-money demanded by the parents of any murdered person.

Parent-in-Law Taboo.—The taboo against a man speaking to his father-in-law or mother-in-law was formerly very rigidly enforced. When the son-in-law lived in the same lodge with his wife's parents, as often happened, a partition was put up to separate him from the others. This was often observed by Jacob Bear when he was a buffalo hunter. If a man wished to ask a question of his mother-in-law, he would inform his wife and then leave the tent. She on her part would not speak to her mother until her

husband was gone. The father-in-law taboo was in force, but not so strongly. I have frequently heard Indians about the Round Lake mission say of individuals, "Why, he is like a half-breed; he talks to his mother-in-law."

There was one occasion, however, when a man might speak to his parents-in-law. When he returned from a successful war excursion, he went directly to them, with his face blackened with charcoal, told them what he had done, gave them part or all of his spoils, and then blackened their faces, beginning with his father-in-law. This was a great honor to them. The taboo was never entirely lifted.

The joking-relationship is said not to exist.

Terms of Relationship.—The following terms are recorded:

<i>n'gawi</i> or <i>nimama</i>	my mother
<i>n'tosis</i>	my mother's sister
<i>n'okomis</i> or <i>notawis</i>	my mother's brother
<i>n'gosis</i> or (wrong way) <i>n'danis</i>	my mother's sister's daughter
<i>niciis</i>	my father's brother
	my father-in-law (man or woman speaking)
<i>n'l'ekwatim</i>	my father's brother's son
	my sister's or brother's son-in-law
<i>niciimis</i>	my father's brother's daughter
<i>notawi</i> or <i>nipapa</i>	my father
<i>nigawis</i>	my father's sister
<i>nictic</i> (or, not so good) <i>nijoam</i>	my elder brother
<i>ni'cim</i>	my younger brother
	my younger sister
<i>ninos'um</i>	my mother's or father's father
<i>nokum</i>	my mother's or father's mother
<i>ni'wikimagdun</i>	my wife
<i>niwi</i>	
<i>nin'apim</i>	my husband
<i>ni'mis</i>	my elder sister
<i>ni'cikwas</i>	my mother-in-law
<i>nitistawa</i>	relation of parents-in-law to each other
<i>nisis</i>	my mother's sister's husband
<i>n'dosis</i>	my mother's brother's wife
<i>niciuu</i>	my brother's wife's brother
<i>ni'lausen'eman</i>	my brother-in-law's wife
<i>ni'ciwana</i>	my sister-in-law's husband

<i>nictau</i>	my sister's husband (man speaking)
<i>niti'm</i>	my sister's husband (woman speaking)
	my brother's wife (man or woman speaking)
	my brother's wife's sister (woman speaking)
<i>ninahacim</i>	my son-in-law
<i>nictim</i>	my daughter
<i>ninahaganickwim</i>	my daughter-in-law

Burial Customs.—Among the Plains Cree bands assembled at the Crooked Lake agency, scaffold burial is not practised, and according to all of our informants it never has been. The funeral ceremonies are as follows:

When a person dies the body is arrayed in all his best clothes. It is carried out through the side or back of the tent, the walls being raised for that purpose. As the body is taken out an old man especially invited for the purpose begins to count his coups, giving the proceeds of his past successful raids to the soul of the dead for use on its journey to the hereafter. This, as will be observed, is a modification of the typical Central Algonkin ceremony. The address to the corpse is somewhat as follows:

"I went to war at such a time, I want to tell you. I took [so many] horses, and you shall ride on the best one of them. At [such a place] I killed [so-and-so]; he will go with you and guide you and light your fires. I took meat and provisions from a lodge [in such a place]; have that for your sustenance."

There are said to be only two men now living under this agency (1913) qualified to perform this rite. They are Big Head and Spotted One.

From the head of the body of an old person a little hair is sometimes cut off and saved. It is asked from time to time to give the survivors a blessing. In the old days when a man was a member of the Mitéwin, the hair was eventually taken to the grave, the contents of the medicine-bag of the deceased was poured over it, and it was buried. The placing of the hair in a bundle to be kept by the chief mourner, as practised by the Central tribes, was not followed.

The grave is made small and lined with blankets. The body is placed in it, upright, with legs drawn up, and with it are placed

all personal property, a fact which accounts for the extreme rarity of antique articles among these Cree. A pipe and tobacco are always included, so that when the soul of the deceased reaches the other land it can give the ruler a smoke, saying, "My friends that I have left behind are forlorn; I pray you give them good fortune."

When the body has been deposited in the grave, sticks are placed over it to prevent the earth from touching it, and these are covered with a blanket, skin, or robe, and the hole is filled in. Over it is erected a little canvas-covered tent roof, somewhat similar to the grave-houses of the Saulteaux and the Central Algonkin, but lacking the hole for egress of the spirit, and such of the deceased person's effects as cannot be placed in the grave are piled outside. The Reverend Dr Hugh Mackay informs me that large sacrifices of cloth were heaped on Loud Voice's grave, and Jacob Bear adds that his gun, bow, and pipe were also left outside.

When the interment is completed, the mourners blacken their faces, loosen their hair, and attire themselves in rags. They slash their forearms and calves, and some even slash their horses. The period of mourning lasts for two years or less, but widows especially mourn for the longer time. The four nights' fire by the grave, so commonly lighted by the Central peoples, is not made by the Plains Cree.

When the mourners return from the grave, a feast is celebrated, and each person present offers a spoonful of food to the dead. One year later the *Wikokeo*, or Feast of the Dead, is celebrated at the grave. If the deceased was a child, only children would be invited by the mourners, and so on. Old men, the elders of the tribe, were called on to offer food or pipes to the dead at long intervals thereafter.

Years ago, while trading with a band of Plains Cree far out on the northern prairie, Jacob Bear attended a "pagan" burial. He gave the following account of what he saw:

"When the child died, a small hole was dug out on the prairie. An old man was called to the tipi where the body lay, to talk, and when there he counted his coups, saying, 'Those that I have killed will accompany you to the hereafter and make your camps for you.' When he had finished, the body was taken out through the side of the tent

amid great wailing, and was carried to the grave, where it was caused to sit upright, was wrapped in dressed skins, and lowered into the hole, which was only a few feet deep. All its toys and utensils were placed about it; a roof of sticks was made over it. The child's parents cut off a lock of its hair and cut off all their own just at the ears, as a sign of mourning. They put their hair in the grave with the body. They cut their arms and legs with a flint or a knife, and rubbed charcoal on their faces. Then the grave was filled, and the funeral was over."

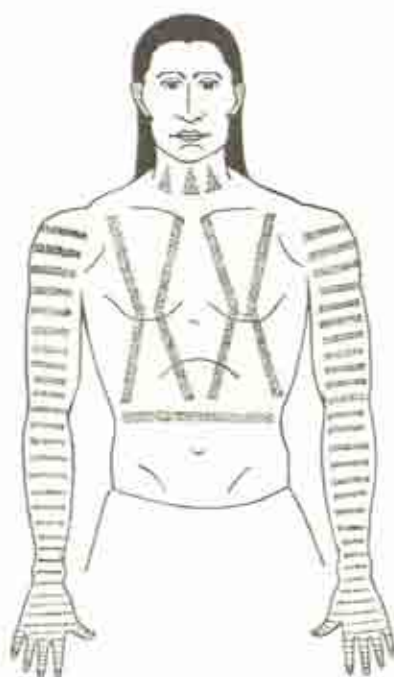


FIG. 10.—Tattooing of Plains Cree.
From a native sketch by S. Ichikawa.

Jacob Bear added that when a man died his clothing was given away, and new garments furnished for the corpse. His tent was also given away. When a woman died her husband lost his tent in this fashion, but the people furnished him with a new one, something which was not done for a widow. Dr Mackay says that whenever a prominent man dies the Indians cease using the camping place where the death occurred.

Souls. There are two kinds of souls, one, the *icipai*, which stays behind with the corpse in the grave, and another the *niu-kaneo*, which goes to the hereafter.

The first, when seen, resembles blue fire; it is the sort that haunts folks. The second can sometimes be heard to cry out; it whistles like a gopher (a small burrowing rodent of the prairie that has a shrill call). When the northern lights are seen the Cree think them the spirits dancing in the hereafter.

Tattooing.—Many men were tattooed in the old days—some because they dreamed they should be, others because their wives urged them to do so and show their bravery. The design usually

employed was sketched in part and described by Four Clouds as below. Jacob Bear has seen many also. The whole body was covered (fig. 10), but the neck was the most painful place to mark. Only certain persons might do the work, and they obtained the right through dreams. A man who desired to be thus marked had to fee the tattooer well unless he dreamed that he must be tattooed, in which case the work was done free of charge. Women were slightly marked on the face for the sake of ornament (fig. 11).

The man desiring to be decorated comes to the dreamer and gives him tobacco. He receives it, and in return sings a song asking mercy of the spirit powers and help from doing wrong. The dreamer then burns the tobacco and points his pipestem downward, toward the region from which the powers sprang. The patient then lies down, and the dreamer commences to operate with eight needles fastened together. As he works he sings "*Musinuwhagê yê eh*", etc.

The patient writhed under the torture, and some young men fainted or cried out that they could not stand it. It was customary, when it was obvious that the youth was about to succumb, to call his sweetheart to sit beside him and so shame him into bearing the pain bravely before her. When the operation was finished, medicine to allay the inflammation was put on like a poultice and held down by a cover made from the hard smoked part of the skin tipi.

Mitêwin, or Medicine Lodge Society.—There were four degrees in the *Mitêwin*, members of each of which were distinguished by their facial painting, the design of which had some relation to their knowledge of medicines.

Birchbark records holding the songs and rituals were kept. It is said that these birchbarks had the figures of animals drawn upon them.

Medicine-bags were made preferably of otter, mink, or weasel skin, although some of snake-skin were used. Bear-skin bags were regarded as evil.



FIG. 11.—Facial tattooing of woman. Drawing by S. Ichikawa.

A week was devoted to praying and fasting before the ceremony was held. Then the lodge was erected. Old people joined because they were instructed to do so in their dreams, young persons in order to be cured of illness. A person who had thus joined the society was a member during the remainder of his life.

After the week of preparation (the Central Algonkin devote only four days to this purpose), the last day is spent in supplication to the gods. The Cree at Round Lake denied any knowledge of the origin of the society, adding that their Saulteaux friends attributed it not to Nānibozhu but to the "Great Spirit". The Cree said the songs of the society came from *K'ce Manitu*. It is said that it no longer exists at Round Lake, as all the members are dead. The few who still know anything about the lodge have no birchbark writings with which to keep record.

Wābanowin.—The *Wābanowin* performers were accustomed to plunge their hands into kettles of boiling water and remove objects without injury to themselves. They could take things from the fire, because they were protected by medicines which they rubbed on their bodies. Sometimes one of these shamans would swallow a red-painted or notched stick a couple of feet long; again an empty revolver would be gulped down and then brought up loaded.

Conjurors.—The order known to the Ojibwa as *Nibikēd*, or *Jesakēd*, existed also among the Plains Cree. The performer was bound tightly hand and foot, and placed in a little tightly made lodge, which he caused to shake while he prophesied. Doctors used to drive away evil spirits with noises. One famous man had the skull of his grandfather, who was a celebrated physician, to aid him in his work. Prayer was much used.

Medicines.—Jacob Bear was once overcome by the medicine-doll love-charm. A woman secured him for intercourse during broad daylight. He was unconscious of what he was doing. Afterward friends cured him. They cut the hair on his crown and both temples, and applied medicines.

Jacob Bear says the Plains Cree have many powerful love-medicines which other Indians buy from them. There is also a medicine which is tied to a tree-top to make people crazy as it

sways in the breeze. This "crazy medicine" (also known to the Menomini) consisted of a hair, a bit of nail-paring, or even some small shreds of the victim's garment that had been secretly procured by a malignant sorcerer. The medicine was suspended from the branch, and the more the wind blew the more the medicine danced and the crazier the victim became.

War Exploits and Medicines.—Once Loud Voice was in a hole fighting, while the others were loading guns. Loud Voice was hit on the head and fell down but was not killed. Then he took bow and arrow and shot an enemy. He was saved by the potency of his medicine.

Buffalo-hoofs, or rather dew-claws, were worn on the garments to deflect bullets magically.

Archeological Data Bearing on Material Culture.—According to Spotted One, Four Clouds, and Jacob Bear, arrowpoints were formerly made of moose-bone. Stone points were picked up, but never made. In fact, they were thought to have been manufactured by the *Memegweticung*, or Water Dwarfs. Four Clouds corroborated this statement, and added that his people found stone knives already made or else were obliged to utilize sharp-edged natural stones. Elk-antler tines were hollowed out and used to point arrows.

Clay kettles were said to have been used, but no one remembers how they were made. Some have been found, it is said, on old camp-grounds.

Three kinds of grooved clubs, or hammers, were used. There was a large, heavy type for crushing bones, a smaller variety of the same form for pemmican pounding, and a pointed one for use as a weapon.

Acting on these suggestions, the writer examined the northern bank of the Qu'Appelle river near the eastern end of Round lake, looking over the plowed fields about the Indian school. These fields are known to have been old Cree camping sites, and here, after a tedious search, were found flint chips, stone arrowpoints of both the stemmed and triangular types, a pointed grooved war-club head of stone, and numerous tiny potsherds. A large grooved maul for bone crushing, found by the Rev. Dr Hugh Mackay on the

same fields, was kindly presented by the finder, and a small pemmican maul found on another site was presented by an Indian, Neil Sâwûstim. Other pemmican hammers seen came from the fields searched by the writer. Mr Boyer, clerk at Round Lake agency, has a fine large grooved axe found nearby.

The natural assumption is that these objects are prehistoric Plains Cree relics, as all tally with Cree accounts, except the stone points, and articles of this kind are known to have been made by the Eastern Cree.¹

Games.—The following list of games was obtained from Four Clouds, Jacob Bear, and Neil Sâwûstim:

Bow-and-Arrow Games.—Trials of skill between youths, each playing with a partner, were common. The players, to the number of four to six or more, would first construct a mound about three feet high. In this they set up a stick which formed the mark at which they shot with bow and arrows. The winners took the losing arrows after each trial.

The hand arrow game (*tcimatatowu*) consisted of the same arrangement of the mark, the same number of players, and the same rules as for the bow-and-arrow game, but the men threw the arrows by hand instead of using the bow.

The men played a variety of shinny called *pagatuwewin*, which seems to have taken the place of lacrosse. A crooked stick was used instead of a racquet, but the goals and the ball resembled those in vogue in lacrosse.

The typical women's shinny game with the double ball was known. The opposing sides were small, usually numbering only four or five players each.

Hand ball was played by the women, and, at present at least, a crude sort of football is played by the youths.

The bowl and dice game, called *pugetewin*, was much played.

The game of moccasin (hiding a bullet in one of a row of moccasins) was in vogue until recently.

Guessing in which hand a rival held a little stick, was called the

¹ See Skinner, Notes on the Eastern Cree and Northern Saulteaux, *Anthr. Papers Amer. Mus. Nat. Hist.*, vol. ix, pp. 24, 32.

"hand game". The players, as in the moccasin game, resorted to every contortion and artifice to deceive one another.

In the stick game a bundle of little sticks was divided into odd and even numbers by one player while the other tried to guess which hand held the odd number. Whichever side first successfully guessed four times, won the game. There were two on each side, and one always held the odd number and his partner the even. The game was called *tipaskwunamatuwin*.

The cup-and-pin game was played with buffalo dew-claws strung on a thong and caught on a bone pin. It was called *napaw-hanák*.

Snow-snake (*sosiman*) was played. The "snakes" were made of wood and were about three feet long. The head-end was fended by a bit of the horn cut from a two-year-old buffalo bull, as such bulls furnished the sharpest and straightest horns. The stick was greased before casting, to make it slide better.

Whipping tops made of stone or the tips of buffalo horns were beaten on the ice by the boys.

Paints.—The favorite paints in olden times were derived from clays found in cutbanks. White, yellow, red, and black were the colors usually obtained. The pigment was collected, pulverized, mixed with water, and formed into little cakes which were baked in a fire made from buffalo dung until they were red-hot. They were then removed and cooled, and afterward were kept in small bags. When wanted for use, a portion was scraped off the cake and mixed with hot grease.

Fire-making.—The bow-drill was commonly used to produce fire. Oak was the best wood for the shaft; the base was generally of cedar, but sometimes other wood was employed. When a spark was generated it was caught in a bit of punk. It is said that sometimes, when fire was needed and no bow-drill was to be had, two sticks were rubbed together until a spark was produced.

Cooking.—Cooking in a bark vessel was not known to or practised by the Plains Cree, but stone-boiling was commonly done by both men and women. A hole was dug about two feet in depth and a foot in circumference, and lined with a bit of fresh rawhide or a buffalo's

stomach, which was pegged down with wooden pins about the rim of the hole. Water was poured in, then meat and blood were thrown in. Hot stones were now brought from a fire near by and dropped into this improvised kettle. In this fashion the meat was soon cooked. In ancient days pottery vessels are said to have been used, but no one now knows how they were made.

Meat was often roasted on a spit before the fire, or it might be wrapped in a buffalo tripe and thrown into the embers, where it was kept until roasted.

Pemmican was made by cutting buffalo meat into long thin steaks and drying them first in the sun, then on a rack or scaffold over a slow but hot fire of buffalo-chips. The dry meat was then placed in a buffalo rawhide, over which another was laid and beaten upon with a flat stone or a stone hammer, or later with a wooden flail. When sufficiently macerated, the meat was mixed with melted buffalo lard, and sometimes with dried saskatoon berries as a relish. The resultant compound was allowed to cool, when it was sewn up in rawhide bags to keep for future use. Pemmican thus preserved is said to have lasted indefinitely. Parfleches were rarely, if ever, used by these Plains Cree; although they knew of them, they preferred rawhide bags.

When lost on the plains in winter, and in need of water, the old people were not always able to obtain wood to melt snow, hence it was customary to fill a kettle with snow and carry it under the blanket next to the body until it melted.

Visitors were always invited to sit in the rear of the lodge in former times, and food was brought to them at once.

Tanning.—When an animal of the deer kind, or a buffalo, had been killed, and the Indians wished to make its skin into leather for clothing or tent covering, the beast was flayed and its skin hung on a branch or a frame, and cleansed of flesh by means of a serrated chisel-like scraper of the forest type. In olden times such scrapers were made from the shinbone of a moose or a buffalo, and were provided with wrist braces of thong. If the skin to be treated was a buffalo hide, it was next stretched and pegged to the ground, and the hair removed by means of a hoe scraper with an

elkhorn or wooden handle. If it was a light deerskin it was thrown over a smoothed log, obliquely set up, and the beaming tool was brought to bear. Next the skin was greased and heated slightly, and deer or buffalo liver and brains, mixed to form a tanning fluid, were rubbed in and the skin left in this state all night. In the morning the tanning fluid was scraped off and the skin worked on a string attached vertically to a post until it was flexible; then it was pulled and dried. The process was now finished, but for moccasin leather or tenting it still had to be smoked. To accomplish this the skin was sewed in a bag; reversed, the bottom slung from an inclined stick or a tripod, and the top pegged down about a little hole in which a punk-wood fire burned. In winter, when it was impossible to dig a hole, the punk fire was made in a kettle suspended under the inverted bag.

Bows, Arrow-straighteners.—For the manufacture of bows the preferred materials were oak or cherry wood. When the bow was shaped, a green hide was boiled for a long time until it was of glue-like consistency. It was then taken and fitted to the back of the bow and tied firmly in place with sinew. Sometimes a snake-skin was pulled over the bow to ornament and protect it.

The bowstring was made of sinew from the back or shoulder of the buffalo. It was moistened in the mouth, divided into three strands, and twisted into cord by rolling on the thigh with the palm. It was then dried, stretched, and straightened before it was ready for use. Stronger ropes were made for other purposes with four strands of sinew.

To straighten warped arrowshafts, buffalo ribs perforated in the middle were used. Buffalo-rib or antler bows, etc., were unknown to the Plains Cree.

Buffalo Robes.—Buffalo robes were fleshed and reduced to a desired thickness with the bone scraper, then further reduced with the hoe scraper. After being dried, greased, soaked in brain and liver fluid, and scraped, they were ready for use.¹

Tents; Women's Celebration.—Tents were made of twenty or

¹ Miss Paget's book, *op. cit.*, p. 72 et seq., has an interesting account of these processes.

more hides, and while manufactured by women were always the property of the men. When a woman had finished a sufficient number of skins for making a tent, she asked her friends to help cut and sew them. There were very few women who could cut the skins properly, so one woman was especially invited to perform this task, and she presided in a way. The invitations were in the



FIG. 12.—Cree camp.

form of tobacco and a pipe sent by a runner, and before the work was commenced a pipe was offered to the "Great Spirit" that his benediction on the work and workers would be given. A feast was held in conclusion, but no men were present. There was no dancing.¹

The men painted the tents. The principal figure used in the ornamentation was the man's dream guardian. Minor figures were various gods or potent spiritual powers, and in old days coups and ornamental figures. Buffalo horns were painted over the door opening to keep away malevolent spirits. Back-rests were used only in the soldier tents.

¹ See Miss Paget, *op. cit.*, p. 94.

The lodge had a three-pole foundation and a small elliptical door opening, with raised threshold, which was covered with a skin flap of the same shape but larger, and was weighted with a wooden binding. The smoke-flaps had the poles attached through sockets. The principal parts of the tipi are as follows (see fig. 13):

A. *Weshwatemûk*, guests' place. Place for medicine at night.

B. Place outside for medicine tripod during the day.

C. *Skuteokan*, fireplace.

D-D. *Pinutakgam*, the opposite sides, used by the occupants.

E. *Ishwatem*, or entrance.

Dog Sledges and Harness.

—Dog sledges were much used in winter. These were made like toboggans, and the dogs, three or four in number, were hitched tandem. Each dog was harnessed with a collar made of wood wrapped with long grass and covered with buffalo leather. The traces extended through these collars and were attached to the leader's collar. The leader was selected for its superior speed and intelligence. Dogs were preferred to horses because they could follow a trail, even during a blinding blizzard, and needed to be fed only once a day.

Shields.—Shields were always made of iron in Four Clouds' recollection, but covered with a soft leathern case fringed with eagle quills and weasel skins, and with a band of these ornaments stretched horizontally across it (fig. 14). A man always emblazoned his shield with bars in black, red, or yellow, indicating his exploits in war. If the owner had been a peacemaker, he added the appropriate number of crosses, one for each occasion on which he rendered peaceful service. The shield was hung from the neck by means of a leather strap. This reference to iron shields does not agree

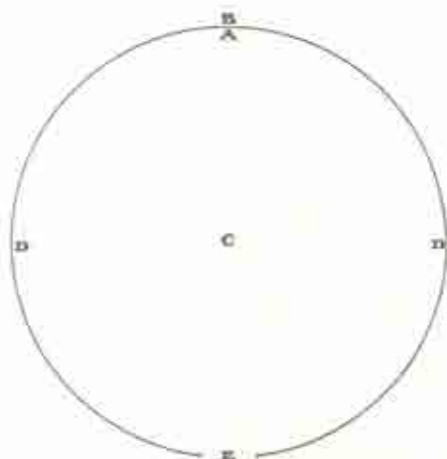


FIG. 13.—Plan of lodge.

with the account of Spotted One, who says they were made of bull-hide stretched with a stick bent and sewn round the edge, and provided with thongs crossed over the back to facilitate holding.

Qu'Appelle River.—This stream is designated *Katépoissipi*, "Calling river", because the Indians used to call all kinds of game there.

Poison.—A man suspected of poisoning an enemy was tried by the chief and his councillors, and if found guilty he was executed.

Grace for food.—I have repeatedly seen the old men hold a dish up and pray before eating.

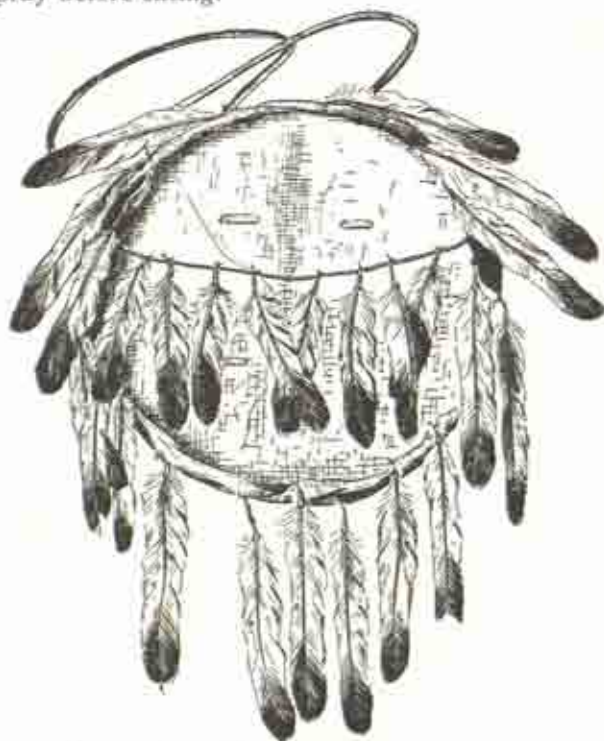


FIG. 14.—Cree shield. Restored from description.

Bags.—Small bags of buffalo-calf skin were seen. These were used for the storage of medicines. A Saulteaux specimen was obtained, made of the foot skins of a buffalo calf. Woven bags of bark fiber were formerly made.

River crossing.—The bullboat and the bark canoe were not used, but Jacob Bear said he and his companions made rafts to cross the

Missouri and ferry over sledges and meat. Such rafts were made by cutting two large logs of equal length for the sides and lashing others to them crosswise. Sometimes the Indians merely lashed two logs together and paddled across. They twisted long grass together to make the ropes for this purpose. Canoes were made by sewing two buffalo hides over a boat-shaped frame; these were for descending the stream.

Months and Seasons.—January, *Otcestuwicikauw-picim*, Kissing month; February, *Megisuwi-picim*, Eagle month; March, *Niski-picim*, Geese month; April, *Aiiki-picim*, Frog month; May, *Sägibukau-picim*, Leaves coming out; June, *Opineauwéwi-picim*, Egg month; July, *Upaskuwi-picim*, Molting month; August, *Uskauhu-picim*, Rutting month; September, *Túkwagi-picim*, Fall; October, *Kuskutnu-picim*, Frost everything; November, *Pauwat-citcukinasis-picim*; December, *Pauwatukinum-picim*.

Sikwân, spring; *túkwagin*, fall; *pipun*, winter; *nipin*, summer.

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FIG. 15.—Cree youths.

THE MAYA ZODIAC AT ACANCEH

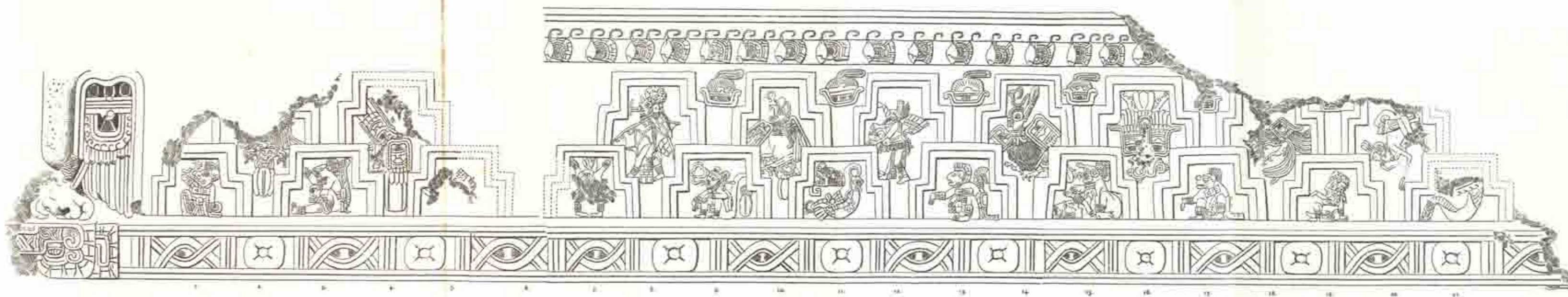
By STANSBURY HAGAR

A FEW years ago a wall about forty feet in length and covered with figures in stucco was discovered on the northern side of a mound at Acanceh, Yucatan, one hour's rail journey westward from Mérida. The place was visited and studied by Maler, Miss Adela C. Breton, and Professor and Madame Seler. Photographs of the figures taken by the first and last named visitors are reproduced, with a carefully prepared drawing of the entire wall, in Professor Seler's paper on the subject. Miss Breton has drawn the figures in color and has also published a brief description of the remains.¹ Mrs James of Mérida has also visited and photographed them.

The inscription is divided horizontally into three parts. In the top band there is a series of alternating symbols, probably representing the butterfly, which may be solar, and the stellar eye symbol, which is conspicuous in the Mitla mural paintings.² In the lowest band are alternating symbols of the planet Venus and two intertwined serpentine figures which probably symbolize the year marked by the northward and southward course of the sun along the ecliptic, and its daily course above and below the horizon. But the middle band contains the most important and varied symbols. It is divided into two rows or panels, the form of which cannot easily be described (pl. xi). The lower row contains eleven human and animal figures, while the upper is composed of seven birds and two human figures. All face toward the west, or left, as is usual in Maya inscriptions. Three figures in the upper row have been completely obliterated,—one at each end of the inscription, and the fourth figure from the western end,—so there seem to have been

¹ Breton, *Archæology in Mexico*, *Mon.* viii, pp. 34-37. Seler, *Die Stuckfassade von Acanceh in Yucatan*, *Sitzungsberichte Königlich Preussischen Acad. d. Wissenschaften*, XLVII (1911), pp. 1011-1025.

² See Spinden, *Maya Art*, p. 213.



THE STUCCO FACADE AT ACANCEH, YUCATAN. (AFTER SELER)

12 figures in the upper row, making a total of 23 in the middle band. In the lower row the third and fourth figures from the western end have been almost wholly obliterated. The inscription terminates at each end in the conventionalized figure of a large bird. The interstices between the panels at the top of the middle band contain sacrificial cups and feathers. The purpose of this paper is to interpret the symbols contained within the panels. Dr Seler has identified them with various animals, birds, and deities, and I accept this identification in many, but not all instances.

We shall read the symbols from east to west, or from right to left, in accord with the direction in which the figures face, reversing the numerical sequence used by Dr Seler. Beginning then with the first legible symbol in the lower line on the right we perceive the figure of a rattlesnake. *Tzab-ek*, Rattle Asterism, is the Maya name of the Pleiades in Taurus.¹ The alignment of this star group readily suggests the rattle of the snake. Above the rattlesnake, in the next compartment on the left, appears a human figure plunging downward head-first. The writer has given reasons in a former paper for identifying this figure, as it appears in a zodiacal sequence in the Dresden codex, with the double sign Aries-Taurus. It seems to represent one of a group of stars called *Tzontemoc* by the Mexicans, whose fall from heaven with the lord of the dead was commemorated in the Quecholli festival held when the Pleiades were on or near the meridian at midnight, or when the sun was in the opposite sign Scorpio ruled by the lord of the dead. Now, just at this time the Taurid meteors were most numerous in the sky. They were so called because they emanated from a point in Taurus not far from the Pleiades, so it seems probable that this falling figure represented the descent of one of these meteors.² In that case, the first two symbols refer to the sign Taurus.

Next to the left in the lower line is a human figure with apparently abnormal proportions, suggesting the Mexican *Xolotl*, lord of twins and of deformed and monstrous beings. He shares with

¹ Brinton, *Primer of Mayan Hieroglyphs*, pp. 34-35.

² See Hagar in *Proc. Internat. Cong. Americanists*, 16th Session, p. 284. Dr Seler thinks the face of the Acanceh figure is that of an ape. Nothing in the astronomical symbolism confirms this.

his twin brother Quetzalcoatl, the Divine Twin, the rulership of the sign Gemini, the Twins. Above him is the quetzal bird, symbol of the deity just mentioned, whom the Maya called *Cuculcan*. Therefore this second group of symbols seems to represent Gemini, the sign following Taurus in the zodiac.

Next in the lower line is a human figure with the head of a crocodile or some other amphibian. It is probably *Imix*, the eighteenth Maya day-sign. This name, according to Brinton and Förstemann, was originally *mex*, the cuttlefish, but it became corrupted and the meaning later associated itself with a crocodile or with some indeterminate sea-monster.¹ Each of the twenty Maya day-signs was assigned in sequence to a definite part of the zodiac, *Imix* to Cancer the Crab, the sign following Gemini.²

Above, an ara flies downward. It is the *Kinich Kakmo*, the Sun Eye and the Ara of Fire which descended from the sky upon an altar at the moment of the June solstice to consume the offerings. The sun is in the sign Cancer at this time, and the ara is perhaps the most prominent symbol of the sign. It was used by the Mexicans as well as by the Maya.³ The symbol of speech, song, or sound that issues from its mouth answers to the Cancer Uinal or months, *Kayab*, Song, and *Cumku*, Thunder, also to the day-sign *Cauac*, one meaning of which is given as music. The reference is evidently to the season of storms, the thunder being regarded as the celestial drum.⁴

The next zodiacal sign is Leo, and in the following panel we see the unmistakable figure of a puma or jaguar which denoted that sign in both the Maya and the Mexican codices. Beside him is the severed head of a human victim. Above is a pelican in the act of swallowing its food. This bird is not elsewhere used as a Leo symbol, so far as the writer is aware, but it is sufficiently appropriate. The Maya festival of fishermen and hunters held during the uinal month *Pop*, when the sun was in Leo, supports other evidence of the association of the Maya sign with the deity of the hunt, for

¹ See Förstemann in *Bul. 28, Bur. Amer. Ethnology*, pp. 366, 367.

² Hagar in *Proc. Internat. Cong. Americanists*, 17th Session, pp. 146 et seq.

³ Hagar in *Amer. Anthr.*, n. s., xv, pp. 19-23.

⁴ See Seier in *Bul. 28, Bur. Amer. Ethnology*, p. 668.

the ritual of the Maya annual festivals, like those of the Peruvians, Mexicans, and the Pueblo tribes of the United States, reflected the attributes of the sign through which the sun was passing at the time when the festival was held. The pelican is a greedy fisher which takes its prey by hovering over the water and plunging upon it when it appears. These birds often fly in large flocks, and their sudden swoop upon a shoal of fish is a striking and beautiful sight. The significance of the pelican as a Leo symbol is clearly indicated in this.

The next lower panel contains an animal which may be a lizard, corresponding with the fourth Mexican day-sign *Cuetzpalin* of Virgo, though its tail does not seem to pertain to the animal named. The iguana is frequently represented in association with *Kan*, the grain of maize, Maya day-sign of Virgo. The figure in the panel above is the maize deity eating a maize cake. He is dressed in dancing costume and carries a basket which may contain tobacco, as Dr Seler thinks, or food. This is the deity who presides over the Maya Virgo asterism. The dancing may refer to harvest rites.

Under Libra, the following sign, the rattlesnake appears again beside a peculiar crescent-shaped object which I cannot identify, but which, to judge from allied symbolism, may represent the lightning or thunderbolt. The snake here stands for *Chicchan*, the serpent, the second Maya day-sign under Libra. This word may conceal the name *chuch*, scorpion, the insect which represents Libra and Scorpio in the Mexican asterisms of Tezozomoc and Sahagun, and the latter sign in the fifth Maya day-sign *Tzec* or Scorpio. Above the rattlesnake is seen an owl, the recognized symbol of the Death God A of the Maya codices who rules the death-signs Libra and Scorpio.

In the lower Scorpio panel is figured a man seated in a chair and wearing an artistic head-dress, probably indicative of high rank.¹ His open mouth, from which issues a conspicuous symbol of speech, and his protruding tongue identify him with the Chilan or oracular priest, the Mexican *Tlaktoani*, who announces the responses which he was believed to obtain from the spirits of the dead. The animal

¹ See Seler in *Bul. 28, Bur. Amer. Ethnology*, p. 380.

tail behind him may be that of a scorpion. A similar figure represents Scorpio in the Borgia and other Mexican codices. The Maya held the Chilan in such veneration that when he journeyed he was almost invariably carried in a litter.¹

A bat is represented above the Chilan. This animal pertains to the Libra uinal *Tzotz*, or Bat, so we may be sufficiently presumptuous to suspect that the positions of the owl and the bat have been interchanged by mistake, or it may be that, as Libra and Scorpio were regarded in the codices as one double sign, care was not taken to differentiate the positions of the symbols relating to its two parts. The sign of speech or sound issuing from the mouth of the silent bat may indicate the oracular symbolism of the sign just referred to. The glyph of the evening star occurs twice beside the wings. The bat deity in the Maya codices devours the light as ruler of the subterranean cavern into which the sun sinks at setting.² This is probably a symbol of the autumnal equinox when darkness prevails over light and the evening star is appropriately placed with these symbols of darkness and night.

The next lower panel is partially obliterated, but what seems to be a tablet of some kind is supported upon two legs, probably of a puma, or ocelot, and at the top of the panel we seem to see the head and antlers of a stag. Both the ocelot and the stag are used as symbols of Sagittarius amongst the Mexicans, and the ocelot amongst the Maya also. *Mazatl*, deer, is the corresponding Mexican day-sign.

The long round objects to right and left should be cases of arrows or other weapons to correspond with the attributes of the war god who rules this sign. The upper panel is entirely destroyed.

Only a trace remains visible of the figure in the lower Capricornus panel. This trace includes a flame-like object which may pertain to the solstitial solar deity. Above is an unknown bird.

In the lower Aquarius panel there is the figure of a squirrel or rodent, suggesting the tenth Mexican day-sign, *Itzcuintli*, some form of rodent. But this day seems to pertain to the preceding zodiacal

¹ Landa (Brasseur ed.), p. 160.

² See Fewkes, *God D*, *Amer. Antiqu.*, VIII, pp. 209, 210, 1895.

sign. The bird above may be a vulture, corresponding with the Aquarius symbol in the Borgiano and related codices.

Finally, the Pisces panel contains a frog which may represent the Virgo uinal *Uo*, Frog, as a catasterism. With it appears the glyph of the uinal twenty-day period. The spiral speech or sound symbol issuing from its mouth may refer to the noisy croaking of the frogs. The upper panel is obliterated. The inscription terminates on the east in a large conventionalized bird serpent, here, probably, symbolizing the sky deity.

We have now found symbols of nearly all the zodiacal signs in proper sequence within the panels of the middle band. Aries is missing, the figure which should represent it at the eastern end of the inscription being obliterated. Sagittarius is doubtful or completely obliterated, and Capricornus indefinite and obliterated, but the other signs are all represented, and from Taurus to Sagittarius every symbol has been identified, with a single exception. It is now a simple deduction that the sacrificial cups in the top band refer to those used in the zodiacal ritual of the monthly festivals, each festival being governed by a different zodiacal sign. And as for the planet symbol in the lowest band, the planets were naturally figured in association with the zodiac because they move only within it. The zodiac of Acanceh is unique in that its symbols are presented in a double sequence, that is with two symbols pertaining to each sign.

The symbols in the lower band may pertain to the asterisms themselves, those in the upper band to the deities governing them, as follows:

SIGN	ASTERISM	GOVERNING DEITY
Aries	(Missing)	(Missing)
Taurus	<i>Tzab-ek</i> , Rattle Asterism	<i>Tzontemoc</i> ¹
Gemini	<i>Xololl</i> , Lord of Twins ²	<i>Cuculcan</i> , the Bird-serpent
Cancer	<i>Imix</i> , Water Monster	<i>Kinich Ahau</i> , Lord Sun-Eye
Leo	<i>Balam</i> or <i>Tz'ikmul</i> , Jaguar	Pelican Deity
Virgo	<i>Cuctspalin</i> , Lizard ¹	Maize Deity
Libra	<i>Chicchan</i> , Serpent	Death God ²

¹ Mexican name, Maya equivalent unknown.

² The positions of this and the Bat deity following should apparently be interchanged.

Scorpio	<i>Chilan</i> , Oracular Priest	Tzotz, Bat Deity
Sagittarius	Ocelot and Stag.	(Obliterated)
Capricornus	(Obliterated)	A Bird Deity?
Aquarius	<i>Itzcuintli</i> , Rodent ¹	Vulture Deity?
Pisces	<i>Uo</i> , Frog ²	(Missing)

The Acanceh zodiac differs from that of Izamal in which each mound bore only the symbol of the sign which governed it, but it is similar to the continuous band of zodiacal symbols presented in the mural paintings at Mitla, and the Mexican or Nahuatl influence is marked throughout these symbols.

We find in this zodiac the same sequence of symbolism which the writer has presented in previous papers on the star chart of Salcamayhua and the star lists of early writers, in the plan of the city of Cuzco and in the annual ritual of Peru, in the codices and ritual, the asterisms of Tezozomoc, Sahagun, and Duran, the names of months and day-signs and the plan of Teotihuacan in Mexico and in the codices and ritual, names of months and day-signs and the plan of Izamal in Yucatan. The writer believes that he has also found this sequence and hopes later to present it in the system of *ceques*, or shrine divisions, of Cuzco, on the inscriptions at Santa Rita in British Honduras, on the wall paintings at Mitla in Mexico, and in the annual ritual of the Pueblo tribes in Arizona and New Mexico. There is also evidence that some of the Mexican and Maya temples were dedicated to zodiacal signs. And between all these sequences the correspondence of the symbolism is marked. To the writer it seems that the existence of this nearly identical sequence in the instances named must be granted by those who examine the sources of information. If this be so it indicates the wide distribution and the importance of the symbolism on which it is based. Whether this zodiacal interpretation affords a satisfactory explanation of the oft-recurring sequence, the reader must judge. But, as the writer has previously pointed out, such a series of sequences cannot be produced either by chance or imagination, nor can an explanation which consistently explains them all in proper

¹ Mexican name, Maya equivalent unknown.

² Virgo as a catastersism.

order. And the explanation is based not on the possibility of perceiving in a certain group of stars one of the countless forms which imagination can locate there, but first upon positive evidence from star charts and lists, from ceremonials and place names, that certain forms were located in certain asterisms, and secondly on the fact that the other symbols consistently fit into the positions to which they must be assigned in the sequence, when the position of any one member of that sequence has been determined. Such is the basis on which rests the evidence of the existence and distribution of an American zodiac known from Peru to Arizona. And it should be added that the analogies between the various examples of this American zodiac are but little more striking than the analogy between it and the zodiacs of the Orient, whatever this fact may mean.

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OGLALA KINSHIP TERMS

By JAMES R. WALKER

THIS paper is based on information obtained from many sources among the Oglala Lakota. Much of the information was fragmentary and repetitive, and none of it was systematized. The best was a paper written in Lakota by Thomas Tyon, an Oglala. This, with an interlinear translation and interpretation, is hereto appended.

When Lakota words or phrases are used they are followed by a translation in parentheses, and if this does not express the concept definitely it is followed by an interpretation, also in parentheses.

A few of the Lakota terms cannot be translated; for instance, the term *oma-wa-heton*, which expresses the relationship of the parent of a married child to the parent of the one to whom the child is married.

The suffixes *-ci*, *-ksi*, or *-si* indicate that connubial relation should not be had with the one to whom the relationship is expressed.

The suffixes *-cu*, *-ku*, or *-tku* are the equivalent of the English preposition "of," as, for instance, *hunku* (mother-of). Sometimes this is duplicated, as in *atkuku*, from *atku* (father-of), the duplicated form being used in speaking of the father of a definite person.

The suffix *-la* gives to a term an endearing significance, and is equivalent to the English suffixes *-ie* or *-y* in such words as "auntie" and "sonny." This suffix may be added to most of the terms of relationship. It is habitually used with some of the terms, such as *hoksila* (boy), *tunkansila* (grandfather), and many others.

The suffix *-pi* indicates the plural.

The suffix *-ya* with terms of relationship expresses the concept of "considered" or "considered as."

The relationship to the first person is expressed by the possessive pronoun *mi* preceding the term, except in those cases where the term expresses this relationship. The relationship to the second person is expressed by the possessive pronoun *ni* (your) preceding the term.

The relationship to the third person is expressed by the suffixes *-cu*, *-ku*, or *-tku*, the term being preceded by the name of the one to whom the relation is held.

The possessive pronoun *ta* (his or her) is habitually used with some of the terms of relationship, but this does not alter the manner of expressing the relationship to the persons; for instance, *ta-wicu* (his-woman, wife) would thus be expressed in her relationship to persons:

<i>mi-ta-wicu</i>	my wife.
<i>ni-ta-wicu</i>	your wife.
<i>ta-wicu-ku</i>	his wife.

This paper is written as if by an Oglala at the time when the customs and usages of the Lakota prevailed among them.

Those who speak certain dialects and conform to certain customs and usages are Lakota. The Lakota are allied against all others of mankind, though they may war among themselves. They are *oyate ikce* (native people), and are *ankantu* (superior), while all others of mankind are *oyate unma* (other-people), who are *ihukuyz* (considered-inferior). This is the relation of the Lakota to all others of mankind, and if any refuse to acknowledge this relation they are *tokoyapi* (considered-enemies), and should be treated as such.

The Lakota *taku-kiciyapi* (consider-one-another-kindred), because they are all either *owe* (of-blood, of-one-blood), or *oweyz* (considered-of-blood). The *owepi* are those whose ancestors were *owepi*. The *oweyapi* are those who have ancestors who were *owepi*, but who have one or more ancestors who were *oyate unma* (other people).

The bonds of relationship of the Lakota are stronger between the *owepi* than they are between the *oweyapi*. These bonds depend on the following conditions: The Lakota are divided into seven *otonwepi* (of-own-blood tribal divisions), of which the Tinta-tonwan (Camp-on-plains = Teton) is the principal *otonwe*. The Tinta-tonwan are divided into seven *ospayepi* (divisions), the Oglala being the principal *ospaye* of these seven.

The Oglala are divided into seven *ti-ospayepi* (tipi-divisions = bands); each *ti-ospaye* is composed of one or more *wico-tipi* (camps), and each camp is composed of two or more *ti-ognakapi* (husbanded-tipis).

Thus the strength of the relationship of one Lakota to another is in the following order: 1, *ti-ognaka*; 2, *wico-tipi*; 3, *ti-ospaye*; 4, *ospaye*; 5, *otonwe*.

A *ti-ognaka* is established in the following manner: A man should take a woman to be *ta-win* (his-woman, his-wife). It is better that she should not be *wico-we* (they-blood, of his immediate family), whose relationship to him is not expressed by a term ending in *cu*, *ksi*, or *si*, and it is better still if she is not of *ti-wahe* (belonging to-the-tipi = any relative of his family), and it is best if she should not belong to his *wico-tipi* (camp). It is the most fitting that he should woo her and *wohpe* (pay-the price-of-a-woman) for her. The price of a woman is six buffalo robes or their equivalent in value, and should be paid to those who have the disposal of her, who are, in the order of the priority of their claims: her elder sister's husband; her parents; her elder brother; her elder sister; her *hunka* (adopted relatives.)

If he cannot get a woman in this manner he may take her by capture, that is, take her without the consent of any one. Or, some one may present him with a woman, in which case he must accept her, though if he does not wish to keep her he may present her to another. If he has taken a woman as captive from another people, it is his duty to have her bear Lakota children, and if he is not inclined to beget children by her he should present her to one who will do so.

By whatsoever method he gets a woman, when they have consummated their sexual relationship, he becomes *hingna* (husband), and she becomes *ta-win* (his woman); or in case she is a captive from another people, then she becomes *ta-winu* (his captive woman).

If the woman he has taken has not a tipi of her own, they should do as follows: If he has *wohpe* he should go with her to the tipi where she has dwelt, for he is *ta-wicu-ton* (possession of his wife), and abide there until she shall erect her own tipi. He is then *wica-*

woha (buried-man) to his wife's mother and sisters, and should not address them, neither should they address him while he abides in this tipi. If he has obtained the woman in any other manner, she should go to the tipi where he abides. Then she becomes *wino-woha* (buried-woman) to his father and brothers, and they should not address her, nor she them, while she abides in this tipi.

It becomes the man's duty to provide her with skins so that she may make the material for a tipi as soon as possible. This should be done before their first child is born, because if a child is born to them while either of them is *woha*, it is of the *wico-we* (immediate-family) of the one whose tipi it is born in, and does not belong to the one who is *woha*. Further, while either the man or the woman is *woha*, they do not constitute a family, and are *ti-wahe* of the family in whose tipi they abide. They cannot be counted in estimating a *wico-tipi*, or camp. As soon as the woman erects her tipi she should lead the man to it and permit him to enter preceding her, and he should seat himself on the *catku* (honor-place; at the back of, inside the tipi, opposite the door). Then she should make a fire on the *oce-ti* (tipi-bottom; fireplace at center, inside the tipi), and seat herself at the left side of the fire before him. When she has done this, they are *wastel-keya* (established well), and are freed from *woha*, and the tipi is *ti-gnaka*. He becomes *hin-gna ku* (husband of), and she becomes *ta-wicu-ku* (his wife of), and they are counted in estimating a camp. If a man take a woman who has a tipi of her own, he seats himself on the *catku*, and this makes of it a *ti-gnaka*, and it is estimated in counting a camp.

If a man take a woman who has a younger sister, or sisters, he has the prior claim to take them as his women, and to the *wokpe* for them.

If he takes one or more of them as his additional women they should dwell in the tipi of the sister already married to him, and there will be no additional *ti-gnaka* established. The relation to one another of sisters married to the same man is expressed by the term *teyak*, and they so address one another. But if a man takes an additional woman who is not a sister of the one he has had, then she should erect and establish a *ti-gnaka* of her own, which will be

counted in estimating a camp. A tipi that is maintained by a woman without a husband is *ti-gnaka-sni* (not husbanded tipi), and is not counted in estimating a camp, because it belongs to the *ti-wake* from which she came. A man who has more than one woman is *wica-blue* (polygynous man).

The man is the head of the family, and his relation to his wife is that of an owner, and he may do with her as he pleases without being accountable to any one, except that he may not cripple or kill her. If he should cripple or kill her, he is accountable to her *wico-we* (immediate family), who may either maim him, or take his life, as the case may be, or accept the price of a woman, which in such cases is twelve buffalo robes or their equivalent in value. He may abandon her at his pleasure, or present her to any one, either as a temporary or as a permanent gift. To give a wife temporarily to another is the greatest courtesy that can be shown. To refuse to accept such courtesy is an insult to both the man and the woman, which are both free to resent in a marked manner. The woman owns the tipi and all that pertains to it, except the man's clothing and accouterments, and the children are by priority hers, except when the woman is a captive from another people.

Her relation to her man is that of subservience, and she may not abandon him without his consent. If she does so, she forfeits all her rights to the tipi and the children, and becomes *wino-wanzica* (lone-woman), and the man may inflict on her such punishment as he sees fit, usually by disfiguring her in some conspicuous manner, such as cutting off her nose or one of her ears. The relationship of children is considered first to their mother, and then to their father, but they belong to their father's camp.

The relationships within the *ti-ognaka* are:

<i>Oti-wake</i> .	Belonging to tipi.	The family.
<i>Oti-toka-hi</i> .	Coming-from another to tipi.	The guests.

The relationships of the family are:

<i>Wico-we</i> .	They-blood.	By blood.
<i>Wico-un</i> .	They-usage.	By usage.

The terms expressing the relationship of *wico-un* and *oti-toka-hi*

are the same as those expressing the relationships of *wico-we* with the addition of the suffix *-ya*. The difference between the terms for *wico-un* and those for *oti-toka-hi* is that the former are permanent while the latter are temporary.

The binding force of the relationship depends somewhat on the gender, but this varies according to the ages. The genders are:

<i>wica</i>	male
<i>wino</i>	female
<i>wico</i>	neuter; they or those of the mankind.

The ages are:

MALE	FEMALE	NEUTER	
<i>wica-hea</i>	<i>wino-hea</i>	<i>wico-kan</i>	old.
<i>wica-heala</i>	<i>wino-heala</i>		oldish.
<i>wica-sa</i>	<i>wino-hinca</i>	<i>wico-tanka</i>	adult.
<i>koska</i>	<i>wi-kuska</i>	<i>wico-boska</i>	young.
<i>kaskala</i>	<i>wi-kaskala</i>		youngish.
<i>hoksi</i>	<i>wi-cinea</i>	<i>wakan-heza</i>	boy, girl, child.
<i>hoksila</i>	<i>wi-cineala</i>		boyish, girlish, childish.
<i>hoksicala</i>	<i>hoksicala</i>	<i>hoksicala</i>	babe.

The bond of relationship is strongest toward those whose ages are expressed by terms which have the suffix *-la*, and toward the females of such. It is the least binding toward the old females.

The Oglala call their collective terms of relationship *wowa-hecon*, (do-mark). The *wowa-hecon* of the *ti-ognaka* are as follows:

MALE	FEMALE	INTERPRETATIONS
Hingna	Ta-win	Husband of one wife, only wife, wife of husband.
Bluze	Ta-yak	Husband of more than one wife, plural wife of husband not sister of other wife.
	Mita-yak	Plural wife, if sister of other wife.
	Wi-nu	Wife captured from another people, or wife loaned temporarily.
	Ta-wicu	Wife of any kind, when connubial relation has been consummated.
Hunkake	Hunkake	Ancestor.
Tunkan	Kun	Grandfather, paternal grandmother (may be used by any one).

Kunsi		Paternal grandmother (used only by grandchildren in addressing or speaking of their father's mother).
Onci		Maternal grandmother (may be used by any one).
Oncisi		Maternal grandmother (used in this sense only by grandchildren when addressing or speaking of their mother's mother), mother-in-law (when used by any other than the grandchildren); a term of respect used when addressing any very old woman, i. e., <i>wino-hca</i> .
Tunkansi		Maternal grandfather (used in this sense only by grandchildren when addressing or speaking of their mother's father), father-in-law (when used by any other than the grandchildren).
Tunkansila		Paternal grandfather (used in this sense only by grandchildren when addressing or speaking of their father's father); a term of respect used in addressing any very old man, i. e., <i>wica-hca</i> ; a title of respect given to a high official, such as the President of the United States; it is also a title of address by the Oglala to their superior god, <i>Wi</i> , the Sun.
	Omaheton	The term used only by the parents of a married daughter when addressing her husband's parents.
	Omawaheton	The term used only by the parents of a married son when addressing his wife's parents.
Atku	Hun	Father, mother.
Ate		Papa (used only by children when addressing their father or his brother).
	Ina	Mama (used only by children when addressing their mother or her sister).
Cin	Cun	Son, daughter.
Tokaza	Tokaza	Grandchild.
Wica-tokaza	Wino-tokaza	Grandson, granddaughter.

Takos	Takos	Child-in-law.
Tawangan	Tawangan	Step-child.
Cinhan	Cun-win	Son, daughter, a definite person.
Cinksi	Cunksi	Son, daughter, so addressed by the father and his brothers, and by the mother and her sisters, all of whom may address the son and daughter by the following ordinal terms:
Caske	Wi-tokape	Son, daughter, first born.
Hepan	Hapan	Son, daughter, second born.
Hepi	Hepistanna	Son, daughter, third born.
Catan	Wanska	Son, daughter, fourth born.
Hake	Wi-hake	Son, daughter, fifth born.
Hakata	Hakata	Son or daughter, last born.
Cekpa	Cekpa	Son or daughter, one of twins.

The following eight terms designate the relationship of the father's and mother's and father's brothers, and mother's sister's children to each other:

MALE	FEMALE	INTERPRETATIONS
Ciye	Tanke	Eldest brother, eldest sister, of male.
Tiblo	Cunwe	Eldest brother, eldest sister, of female.
Sunka	Tankasi	Younger brother, younger sister, of male.
Sunka	Tanka	Younger brother, younger sister, of female.
Hunkasi	Hunkasi	The relation that the father's brother's children bears to the mother's sister's children, and vice versa.
Tahan	Hanke	Relative to male, brother-in-law, sister-in-law (the elder sister of wife).
	Hanka	Relative to male, sister-in-law (the younger sister of wife), and brother's wife.
Sice	Sicepan	Relative to female, brother-in-law (the sister's husband), sister-in-law (the brother's wife).
Sicesi	Sicepansi	Relative to female, uncle (the husband of the father's sister), and male cousin (the son of father's sister), sister-in-law (the wife of husband's brother), and

		female cousin (the daughter of father's sister).
Tahansi	Hankasi	Relative to male, uncle (husband of father's sister), and nephew (child of sister), aunt (the wife of the mother's brother), and niece (the child of the sister).
Tonzan	Tonska	Relative to male, nephew, niece (child of wife's brother).
Tozan	Toska	Relative to female, nephew, niece (child of brother or of husband's sister).
Leksi	Tonwin	Uncle (the brother of the mother), aunt (the sister of the father).
Hunka-wanzi	Wino-htin	Brother, sister, in a fraternal manner.
Hunka	Hunka	Relative adopted with ceremony.
Ateya		Foster-father.

My father's brother's children and my mother's sister's children speak to and of my father and mother as if these were their own parents, while my father and mother speak to and of such children as if they were their own. The terms of relationship of the father's and mother's children, and of the father's brother's children, and of the mother's sisters' children are the same as if they were all children of the same family.

To make the distinction between the actual father and mother and their children, and the father's brothers' and mother's sisters' and their children, possessive *kī* (own) is used, usually with a pronoun following the term of relationship, for instance:

tiblo (her elder brother) may be the son of her father or of her father's brother, or of her mother's sister. *Tiblo wicakī* (her elder brother their own) would be the son of her father.

The same conditions apply to step-relatives.

Text¹

Lakota agina wouakezon tana un kin lenakeca ye lo

Lakota among relationship as-many use the all-these

The Lakota use all these terms of relationship.

¹ This is a copy of a paper written in Lakota by Thomas Tyon, an Oglala, with interlinear translation and interpretation. The terminal words *to*, *ye lo*, *we lo*, and *ye lo* constitute an oral period as used in English composition, and they are represented accordingly in the translation.

Tokaheya wanna wanji wicaxa tawicun ten kij han tawicu mitawicu
 Beginning now one man wife has own when wife my-wife
 The beginning is when a man has his own wife he addresses her as mi-ta-wicu.

eya cekiya lo Na inx winyan kin mihingna eya cekiya lo
 says addresses. And while woman the my-husband says addresses.

While the woman addresses him as mi-hingna.

Wanna hetan tokaheya wowahcon olokaheya iyaye lo
 Now from-this beginning relationship beginning-of reckoned.
 Now the relationship is reckoned from this beginning.

Iho wanna cinca wanji hokxila ca tonpi kinhan iyohakapa wanji
 Well now child one boy may-be born the-when afterwards one
 Well now if a child is born it may be a boy, and then if afterwards another is

tonpa yunkan wicincala ca tonpi kinhan hokxila kin wacekiyan kte
 born and-if girl may-be born the-when boy the I-address will
 born it may be a girl, and then if the boy addresses the girl he will say mi-tanksila.

cinhan mitanksila eya lo Na inx wicinea kin wacekiyin kte cinhan
 the-when my-younger-sister says. And while girl the I-address will the-when
 While the girl in addressing him will say tiblo.

tiblo eye lo Iho wanna ake iyohakapi wanji yuhapi yunkan ake
 elder-brother says. Well now again afterwards one have and-if again
 Well now again if they have one and it is a boy, then when

hokxila kinhan tohapapi gon heyus cekinyapi kte cinhan unma winyan
 boy the-when first-born said either address will the-when other female
 those first born address him, though one is a female and the other a male, they will

na unma wica geyax nonpin yan misunkala eyapi lo Nahan
 and other male though both speak my-younger-brother say. And-when
 both speak the same and say mi-sunkala. And when

inx eya hakakta kin wacekiyin kte cinhan unma ciye eye lo
 while says youngest the I-address will the-when other elder-brother says.
 the youngest addresses his elder brother he will say ciye.

Nahan unma kin tanke eye lo Iho hecel wicowepi gon hena winyan
 And-when other the elder-sister says. Well thus family said those female
 And when his elder sister he says tanke. Well in this family in case the first is a

wan tokapi ehantanx cunwe eya cekinpe lo Na hakatala gon he he
 a first in-case older-sister say address. And youngest said that that
 female they address her as cunwe. And if the youngest is a female

mitankala eya cekinyape lo Nahan wicowepi nonp wicapi ehantanx
 my-younger-sister say address. And-when family two males in-case
 they address her as mi-tankala. And when in case there are two males in the

tokapa gon he ciye eya cekinyapi lo Na hakatala gon he
 first said that elder-brother say address
 family they address the first born as ciye. And youngest said that
 And they address the

misunkala eya cekinyape lo Iho hecel wicasa wan winyan wan
 my-younger-brother say address - Well thus man a woman a
 youngest as mi-annkala. Well it is thus, if a man and a woman are

kici kiciyuzo gon he tibloku tankaku nainx
 together hold-each other said that elder-brother-of younger-sister-of and-while
 married and together as mentioned, then in case the woman has an elder brother, a

cuweku esa yuke ehantax winyan kin le hinknaku kin le
 elder-sister-of if there-are in-case woman the this husband-of the this
 younger sister, and an elder sister, the husband of this wife will call her sisters tanka.

tawicu kin tanka yin kte lo

wife the younger-sister says will .

Na wica ehantax tahan yin kte lo Na inx eya hektakiya

And male in-case brother-in-law says will . And while says in-reply

And in this case he calls the male tahan. And he will say in replying.

tahan eya kte lo Na winyan kin han inx wica kin na
 brother-in-law says will . And woman the when while male the and
 tahan. And in such case the woman will say xice.

xice eyin kte lo Iho hecel wicaxa nonp tanhan kiciyapi gon
 brother-in-law says will . Well thus men two tanhan call-each said
 Well when two men call each other tanhan and their

icincapi kin hena iyuka winyan na inx wicapi gon hena winyanpi gon
 children-of the those all female and while males said those females said
 children are as mentioned, a female and males, in case the female children of the
hena atukukupi cincapi gon winyan ca wacekinyan kte ehantax xicexi
 those fathers-of children ad female may-be I-address will in-case cousin
 fathers address the males they will say xicexi.

eya lo

say .

Na wica kin wacekinyin kte cinhan hankasi eya lo Wicaxa nonp

And male the I-address will the-when cousin say . Men two

And the male addressing the female will say hankasi. When two

tanhan kiciyapi gon unma tankanku cinca wanji cekinyin kte cinhan
 tanhan call-each other said other tanhan-of child one addresses will the-when
 men call each other tanhan if one addresses the child of the other, in case it is a

winyan ehantax tonjan eya lo

female in-case niece says .

female he says tonjan.

Na wica kinhan tonxka eye lo Kinhan inx eya cekinyapi kte ehan-

And male the-when nephew says . The-when while say address will in-

And if it is a male he says tonxka. While if they address him in such case they

tanx lekxi eyapi kte lo Nahan tawicu kin inx eya hak taku cinca
 case uncle say will . And-when wife the while says youngest-brother-of child
 will say lekxi. And if his wife addresses her youngest broth child, may

kin cewica kinyin kte cinhan winyan ca cekinyan kte cinhan in
the addresses-them will the-when female may-be addresses will the-when niece
be it is a female when she will address it and say tonjan.

eye lo Wica chantanx toxka eye lo

says . Male in-case nephew says .

If a male she says toxka.

Na inx eya askinyapi kte nonpin tonwin eyapi kte lo

And while say address will both aunt say will .

And both when they address her will say tonwin.

Iho wicaxa wan tawicu gon he tawicu kin atkuku kin cekinyan tun-

Well man a wife said that wife the father-of the addresses father-

Well when a man addresses the father of his wife he will say tunkansi.

kansi eye kte lo Na inx conwintku hingnaku kin cekinyin kte chantanx
in-law says will . And while daughter-of husband-of the addresses will in-case

And in case he addresses the husband of his daughter he will say

mitakas ayin kte lo Nahan hehanl wicaxa wanji tawicu hunku kin

my-son-in-law says will . And-when then man one wife mother-of the
mi-takes.

And then when a man addresses the mother of his

cekinyin kte cinhan oncesi eyin kte lo Kin hana inx eya mila-
addresses will the-when mother-in-law says will . The when while says my-son-in-
wife he will say oncesi.

While she will address him as

kos eyin kte lo

law says will .

mi-takes.

Iho ito miya un Thomas Tyon micinca kin cincapi kin hena takosa

Well so I am Thomas Tyon my-child the children the those grandchild

Well I am Thomas Tyon, and the children of my child I call takosa.

wica waye lo Kin inx tunkansila mayanpe lo

them I-call . The while grandfather call-me .

While they call me tunkansila.

Hebanyan hecetu we lo

So far correct .

This is correct so far.

Iho ake winyan wanji kiciwaun yunkan chantanx cinca yuke

Well again woman one I-am-together and-if in-case child there-is

Well again, if I marry a woman and in case she already has a child, then I will

cinhan cinca kin tawangan wayin kte lo Na inx ate mayan kte lo Iho
the-when child the step-child I-call will . And while papa call-me will . Well

call this child tawangan. And it will call me ate. Well

hecel micinca kin tawicu kin atkuku kin omawahetun wayin kte lo Na inx

thus my-child the wife the father-of the omawahetun I-call will . And while

thus I will call the father of my child's wife omawahetun. And he

eya omahetun mayin kte lo

saye omahetun call-me will .

will call me omahetun.

Na lekxi cinca kin wacipi kin hena tahanxi wicawayin kte lo

And uncle children the males the those nephew I-call-them will .

And I will call the male children of my wife's brother tahanxi.

Na winyanpi kin hena hankaxi wicawayin kte lo Na inx eya wicapi

And females the those niece I-call-them will . And while say males

And I will call his female children hankaxi. And the males will call

kin hena tahanxi mayanpi kte lo Nahan na winyanpi kin hena xicexi

the those uncle call-me will . And-when and females the those uncle

me tahanxi. And the females will call me xicexi.

mayanpi kte lo Iko hehanl winyan nonp wicabluz kin teyaku

call-me will . Well then women two polygynous the plural-wife-of

Well, when two women are married to one man they will call each

kiciyapi kte lo Wowuhecon kin he cuwe kiciyapi quyax onpi

call-each other will . Relationship the that sisters call-each other though use

other teyaku. Sisters do not use this term of relationship for when they ad-

xni miteyaku kin eya cekiciyapi lo Iko hecel ito mitawicu

not my-plural-wife-of they say address-each other . Well thus so my-wife

dress each other they say mi-teyaku. When I speak of my wife's

atikuku kin tunkan waye lo Na mitawicu hunku kin oncisi

father-of the grandfather I-say . And my-wife mother-of the mother-in-law

father I call him tunkan. And I call my wife's mother oncisi.

waye lo Na inx nonpin takos mayanpi lo Na mitawicu kin atikuku

I say . And while both son-in-law call-me . And my-wife the father-of

While they both call me takos. My wife's father and her

na hunku kin kici omahetun kiciyapi lo

and mother-of the each other omahetun call-each other .

mother call each other omahetun.

Na mitawicu wicawepi kin tona winyanpi kin iyuka hanka wicaw-

And my-wife family the as-many females the all hanka I-call-

And I call all the females of my wife's family hanka.

aye lo

them .

Na inx iyuka xice mayanpi lo Na mitawicu hakataku wi-

And while all xice call-me . And my-wife younger-brother-of they-

And they all call me xice. And I call all of my wife's real younger

caki iyuka tanhan wicawaye lo Na inx eya tanhan mayanpe lo

own all tanhan I-call-them . And while say tanhan call-me

brothers tanhan. And they call me tanhan.

Iho hecel micinca winyan kin cewakinyin kte cinhan cunksi epin kte lo
 Well thus my-child female the I-address will the-when cunksi I-say will .
 Well thus when I address my female child I will say cunkxi.

Na wica kin cinkxi epin kte lo Na inx mitawica kin han cunwintku kin
 And male the cinkxi I-say will . And while my-wife the when daughter-of the
 And I will say to the male cinkxi. And when my wife addresses her daughter she
cinhan cunkxi eyin kte lo Naham cinca wica kin ecekinyan kte cinhan
 the-when cunkxi says will . And-when child male the address-to will the-when
 will say cunkxi. And when she addresses her male child she will say
cinkxi eyin kte lo
 cinkxi says will .
 cinkxi.

Iho hecel ito micinca winyan he tuwe tokeca wawiyunga cinhan
 Well thus so my-child female that who another I-speak-to the-when
 Well thus when I speak to another of my female children I will say this.

heyin kte lo He tuwa cunwintku so eyin lo Naham micinca wica kin
 say-this will . That who daughter-of ask says . And-when my-child male the
 I speak of her as cunwintku. And when my child is a male I
kicihan he tuwe cinhintku so eyin kte lo Naham micinca xni skantanx
 when-for that who son-of ask say will . And-when my-child not in-case
 will speak of him as cinhintku. And when I speak of my step-child

he tuwe tanku¹ so eyapi lo
 that who step-child-of ask say .
 I say tanku.¹

Na nakun he tuwa tawanganku so eyapi lo
 And if that who step-child ask say .
 And if a step-child I say tawanganku.

Iho hehanyan slolwa ye lo
 Well this-much I-know .
 Well this is as much as I know.
 FORT LUPTON, COLORADO

¹ This alludes to the father's brother's children and the mother's sister's children.
 See above, page 103.

PROCEEDINGS OF THE ANTHROPOLOGICAL SOCIETY OF
WASHINGTON

Meeting of October 28, 1913

A special meeting of the Society was held October 28, 1913, in the National Museum building at 4:30 o'clock.

DR ALEŠ HRDLIČKA addressed the Society, his subject being *The Results of a Recent Trip to Peru, with Remarks on the Anthropological Problems of that Country*, illustrated with lantern slides. In 1910 the speaker made a brief exploratory trip in Peru, which resulted in the acquisition of some valuable data and of important skeletal collections. The opportunity to extend the investigations came during the early part of 1913, in connection with the preparation of the anthropological exhibits for the Panama-California Exposition at San Diego. Three busy months were spent on the coast and in parts of the mountain region of Peru, in exploration of ruined cities and ancient cemeteries. The principal objects of the trip were (1) the mapping, as far as possible, of the anthropological distribution of the prehistoric Peruvians, more particularly the coast peoples; (2) the determination of the physical type of the important Nasca group, which represents one of the highest American cultures; (3) further inquiry into man's antiquity on the western coast of South America; and (4) the extension of the speaker's researches in pre-Columbian pathology. The conclusions to which Dr Hrdlička was formerly led were in the main corroborated. In regard to the mountain regions much remains to be determined. As to the pathology of the native Peruvians before contact with whites, the main work can perhaps be now regarded as practically finished, although individual variation in different morbid processes seems inexhaustible, and much in this line remains to be accomplished by future investigation. The ground covered was extensive and the skeletal material examined was enormous, the collections alone filling more than thirty boxes. No excavation was conducted, attention being restricted, on the coast, to the bones covering the surface of ancient cemeteries, exploited by the peones, and to burial caves and houses in the mountains.

Since Dr Hrdlička's trip to Peru three years ago, a change for the worse was observed in the state of preservation of the ancient remains. Also, where formerly there were seemingly inexhaustible quantities of

skeletal material, there is now a dearth of it. No such collection as that made in 1910, when the speaker gathered 3,400 important crania, will ever again be possible from these regions. The major part of the old population of the coast region belongs to the brachycephalic type, intimately related to the Maya-Zapotec type in the north. Wherever they lived, these people of the Peruvian coast were wont to practise, more or less, the antero-posterior head deformation. Everywhere along the coast there are evidences of more or less admixture with a more oblong-headed element closely related to the Aztec and Algonquian types of North America. As among the North American Pueblos, nowhere was the aboriginal Peruvian population at any time as great as the relatively numerous cemeteries or ruins might lead one at first to suppose, for these burial grounds and ruins date from different, although not far distant, periods.

The work done, while to some extent establishing a foundation, is merely a fair beginning. Similar investigations and collections wait urgently on the anthropologist in the important districts of Piura, Eton, and Moquegua, on the coast; in the western sierras from the neighborhood and latitude of Cajamarca to Arequipa; and in the eastern highlands from Tiahuanaco to Moyobamba. The most important problems that await solution are (1) the derivation of the Peruvians; (2) the time of their advent into the country; (3) the extension and exact physical characteristics of the Aymará and Quechua; and (4) the genetic relations of the Peruvian to the Argentina and Chilean aborigines. Besides, there remains to be established in many places the correlation of culture with the physical type of the people. Dr Hrdlička repeated what he stated in a former report, that, owing to the lack of scientific supervision of a great majority of the excavations that have been conducted in Peru, the archeological collections from that country consist of little more than curiosities which it is impossible to refer either to any definite people or to any specific period.

DANIEL FOLKMAR, *Secretary.*

Meeting of November 4, 1913

At a special meeting of the Society on November 4, 1913, Dr JOHN R. SWANTON, of the Bureau of American Ethnology, read a paper entitled *The Indian Village*. Dr Swanton said that while it is a common notion that country life preceded urban life, this view is hardly correct, urban life in its germ going back almost as far as man himself. He then took up the various factors tending to produce the village,

determine its character, and subsequently knit it together. These he found to be of three orders—material, social, and religious. Among the first he enumerated material available for the construction of houses, position with reference to the food supply and fresh water, and occasionally also position with reference to the sun. Among social factors he treated trade, desire for exchange of ideas, need of mutual protection, and relationship, especially in the peculiar form it assumed under totemism. Finally the growth of a village or town cult was traced from the practical independence of shamanism pure and simple to the complete town ritual, sometimes directly, sometimes through the fusion of clan ceremonies, and sometimes through the rituals of religious or other societies. These factors were illustrated by reference to the tribes of the North Pacific coast and the Gulf area. A possible evolution was suggested in three stages: first, the haphazard collection of hunters, fishers, or perhaps agriculturists, in a certain spot; second, the development of social relations among them, particularly through intermarriage; and, third, a religious seal or stamp of unity, though it was not the speaker's intention to set this up as a hard-and-fast process of evolution. It was noted that totemic clans among some tribes might have been evolved in a similar manner. In conclusion a brief comparison was made between the Indian village and the modern city, attention being called to the fact that in the latter the most important determining factor is trade, while in the former relationship, religious observances, and to some extent motives of protection, were much more prominent.

The subject was discussed at some length by Mr J. N. B. Hewitt, who confined his remarks to the village in the social organization of the Iroquois. The basis of the social organization was actual or fictitious blood kinship traced through the mother. The cohesiveness of the several units was obtained through the ties of duty and privilege subsisting between clans united by the marriage of their sons and daughters. The clans were organized into two phratries or sisterhoods of clans, one of which represented the masculine and the other the feminine, in nature. This division was maintained in all public meetings. The one side was therefore called the "father side", and the other the "child side", which of course was the "mother side". Strong lines of actual or artificial kinship and cleavage existed between these two groups. The clan totems have no especial religious significance at present, that is, there are no ceremonies in honor of them. That there were such in early times is quite possible. The decadence of the worship of the clan totem was due probably to the unification of the clan government into

that of the tribe, and, later, of the tribe into that of the confederation. The great influence of the council of women, composed of mothers only, in the affairs of the village and tribe and confederation was emphasized, and illustrated by the effectiveness with which they could stop or prevent a war. They needed only to forbid their sons to engage in warlike activity under penalty of becoming outlaws to the tribe and confederation. The gradual adoption of the Tuscarora tribe of North Carolina by the Iroquois League on motion of the Oneida as their sponsors, was described, the Tuscarora being first regarded as infants, then as boys, then as hunters who were not allowed to take part in the wars and councils of the League, and finally as warriors having their chiefs to represent them in the Federal Council of the League.

DANIEL FOLKMAR, *Secretary*.

Meeting of November 25, 1913

The 469th regular meeting of the Society was held November 25, 1913, in the new building of the National Museum, the president, Mr G. R. Stetson, in the chair.

DR DANIEL FOLKMAR, who has charge of the report on "Mother Tongue" in the Bureau of the Census, addressed the Society on *Some Results of the First Census of European Races in the United States*. Statistics of the mother tongue, or native language, of the "foreign white stock" of the United States are presented in the report soon to be issued by the Bureau of the Census. It was prepared under the supervision of the chief statistician for population, assisted by the speaker as expert special agent. There were presented, for the first time in the census, figures directly relating to the ethnic composition of the white population of the United States, in so far as that is indicated by the native language. This term is taken to mean the language of customary speech in the homes of immigrants before immigration.

One of the most interesting facts disclosed in this report is the great numerical preponderance which is still held by the mother tongues of northwestern Europe as a whole, notwithstanding the high rank numerically which has been gained by a few individual mother tongues from eastern and southern Europe—especially the Italian, Polish, and Yiddish. These three now stand third, fourth, and fifth in rank. The English mother tongue is by all odds the one most largely represented in the foreign white stock of the United States. The number, 10,037,420, is considerably greater than that of the German mother tongue, which latter contributes more than one-fourth (27.5%) of the total foreign

white stock of the United States as reported in 1910. Italian, Polish, and Yiddish come next in rank, but none of them number as much as one-fourth of the German. To these three mother tongues, intermediate in rank but considerable in numbers, may be added the Swedish, French, and Norwegian, all belonging to northwestern Europe, except a portion of the French. No other mother tongue than the eight thus far enumerated furnishes as much as 2% of the total of the foreign white stock of the United States, or numbers as much as 1,000,000. The eight major mother-tongue stocks already named account for 87.5% of the total foreign white stock.

How small a factor the "new" immigration from southern and eastern Europe really is, to the present time, may be better shown by comparing it with the total white population of the United States. Taking as 100% the total white population of the United States in 1910, numbering 81,731,957, the so-called "native stock" constitutes 60.5% and the three great linguistic families of foreign-stock from northwestern Europe constitute 27.1%, making a total of 87.6%. The elements from southern and eastern Europe constitute, therefore, less than 13% of the total. Of this the two principal Latin mother tongues—the French and the Italian—contribute less than 5%, and the two principal Slavic mother tongues—the Polish and the Bohemian—and the Hebrew, taken together, contribute also less than 5%, leaving to all the remaining mother tongues another 5%, or less, of the total. Of the total foreign white stock of the United States, 32,243,382, there are 8,817,271 persons who are of German stock when counted according to mother tongue, but a trifle under 8,500,000 (8,495,142) of German stock when counted by their country of origin, Germany.

Immigrants from Austria are far more Slavic than Germanic. Russian immigration is shown to be far more Hebrew (52.3%) than Russian (2.5%) or even Slavic. Immigration from Turkey in Europe is not so much Turkish as Greek and Bulgarian. Both the first and the second generations of immigration from Russia show that more than 50% report Yiddish and Hebrew as their mother tongue. The returns for "Yiddish and Hebrew" reflect ethnic composition less satisfactorily than the returns for other mother tongues. A part (how large a part there is no means of judging) of those whose ancestral language is Hebrew doubtless have reported German, English, Polish, or other mother tongues. Of the total number of Yiddish-speaking people 838,193 come from Russia, 144,484 from Austria-Hungary, 41,342 from Roumania, 14,409 from the United Kingdom, and 7,910 from Germany.

The paper was discussed by Messrs Stetson, Hough, and Farquhar, and Mrs James.

DANIEL FOLKMAR, *Secretary*.

Meeting of December 9, 1913

A special meeting of the Society was held at 4.30 P. M., December 9, 1913, in Room 43 of the new National Museum building, the president, Mr Stetson, in the chair. About fifty persons were present.

DR CHARLES B. DAVENPORT, of the Carnegie Institution, director of the laboratory at Cold Spring Harbor, Long Island, addressed the Society on *Man from the Standpoint of Modern Genetics*. He said that the problem of the origin of species has now become largely reduced to the problem of the origin and survival of the characters of the species. Since groups differentiated by a single character are called biotypes, the question of the origin of species is now that of the origin of biotypes. Man is a congeries of biotypes. If these do not exist as distinct elementary species it is because of the tremendous hybridization that is taking place between biotypes. These biotypes are most nearly realized in islands, peninsulas, and out-of-the-way places. The most distinct of the human races exist today in such places as Australia and Ceylon, the Japan islands (Ainos), Cape Horn, and inside the Arctic circle within the Old and the New World. But in small islands of the coast where people have been long settled and little disturbed, they tend to approach a pure race or biotype.

Under the shelter of this isolation, incidentally, opportunity has been afforded for an adjusted race to spring up; but there is danger of deterioration through too close interbreeding. Hybridization, as stated, is constantly preventing the complete development of these biotypes. This hybridization has gone on with man since early times, so that few biotypes are now actually realized. It is now going on faster than ever, and even the rare fairly pure biotypes are fast disappearing from the globe. The work of the anthropologist of the future must be largely with these hybridized biotypes; his principal study will be the inheritance of the various differential traits.

The method of inheritance of some of these traits has already been studied. Thus we know that the brown iris is dominant over its absence, as seen in blue eyes. The skin color of the negro is complex, being due to two double (or four) factors; and these may work independently of one another, so that we have over two, three, or four pigment factors in the skin, producing the typical quadroon, mulatto, Sambo, and full negro

skin coloration. Dark brown hair is dominant over blond hair; so that when both parents have only blond hair the children are all blonds. Two red-haired parents have only red-haired offspring. But two glossy black-haired parents may carry red hidden and so have red-haired children, as we so often see among the Irish. Kinky or curly hair is dominant over straight. Two straight-haired parents have, typically, only straight-haired children.

Many "hereditary diseases" depend on a "diathesis", a non-resistance that is clearly inherited, and if matings of like or of relations occur extensively, we have the elements necessary for the production of a biotype. Among such diseases are Huntington's chorea, presenile cataract, and night blindness. Other diseases are inherited as sex-linked characters—such are color blindness and the "bleeding tendency". Very striking is the tendency to produce a real biotype of the imbecile class, because imbeciles tend to segregate themselves and to intermarry. This is the reason why we get such histories as the Nams of New York, the Hill Folk of Massachusetts, the Pineys of New Jersey, and the Jukes of New York. Any condition that favors consanguineous matings, or matings of likes, favors the formation of a variety of the human race, as Dr Alexander Graham Bell (the Francis Galton of America) long ago pointed out. Thus most institutions which do not provide permanent custodial care tend to promote such marriages; for example, among the deafmutes, tubercular, nervous, paupers, and even alcoholics and users of narcotics. On the other hand, in consequence of social stratification, fine near-biotypes, like the Lowells of Boston, the Dwight Woolseys of Connecticut, the Bayard-Jay-Livingston complex of New York, and the "first families of Virginia" have arisen. Actors tend to marry each other and so rapidly produce nearly pure strains of histrionic talent. This nation owes more than it recognizes to its strains of inventors, surgeons, commanders, statesmen, authors, artists, and financiers that have made her famous and given her the high standing she has attained in the family of nations.

Thus biotypes in man prove to be real things, and their study is quite as much within the proper field of research of the anthropologist as are the commonly recognized races of men.

The paper was discussed by Doctor Hrdlička.

DANIEL FOLKMAR, *Secretary*.

Meeting of December 16, 1913

At the 470th regular meeting of the Society held December 16, 1913, MR JAMES MOONEY, of the Bureau of American Ethnology, delivered an address on *The Gaelic Factor in the World's Population*. The speaker dealt chiefly with the Irish Gaels and drew a distinction between the Irish of native Gaelic stock and the unassimilated alien element massed in several of the northeastern counties as the result of the "Plantations" under James I and Cromwell. This alien element was of English and Lowland Scotch stock, with a slight Highland Gaelic infusion, Protestant in religion and mostly Unionist in politics, while those of the old native stock were as solidly Catholic and Nationalist. Speaking broadly, in Ireland the Catholics represent the original Gaelic stock; the Episcopalians, those of English stock; and the Presbyterians and Methodists, those of Scotch origin, constituting respectively about 74, 13, and 11% of the total population. The present Gaelic race of Ireland is a blend of the Gael proper, a Keltic people who arrived in the country probably from northern Spain about 1000 B.C., and of all other races who preceded or followed them up to the end of the thirteenth century, including the neolithic man, the unknown megalith builders, the dark-haired Firbolg, the Picts, Danes, Normans, and Welsh. The Irish immigration to the American colonies previous to the Revolution was mainly of the alien Scotch and English element, known sometimes as Scotch-Irish. The Gaelic Irish immigrants did not begin to arrive in any great number until after the war of 1812, excepting in Maryland.

The wars growing out of the Reformation and the Stuart contests reduced the Irish race from an estimated 2,500,000 in 1560 to about 960,000 at the end of the Cromwellian war in 1652. In 1845 it reached its maximum estimate of 8,500,000. Then came the great famine of 1846-47. Within three years nearly 1,500,000 perished of hunger or famine fever. This started the great flood of emigration through which Ireland has lost virtually half of its population within sixty years. In 1911 it stood at 4,390,219, the lowest point reached in more than a century. Owing to governmental and economic conditions this decrease has been chiefly at the expense of the old native Gaelic stock rather than the Planter stock, the Gaelic percentage, as indicated by the religious statistics, having fallen from 83 to 74. In the sixty years ending March 31, 1911, according to the official British figures, 4,191,552 emigrants left Ireland, or nearly as many persons as are now living in the country. About 3,000,000 of these came to the United States, the total Irish

immigration to this country from 1821 to 1900 being, officially, 3,871,253. From 1821 to 1850 the Irish constituted nearly half of all our immigrants. Previous to the Revolution the "Scotch-Irish" immigration was so great that in an official Parliamentary inquiry in 1778 it was asserted that nearly half the American Revolutionary army was of Irish origin. Since 1870 the number of Irish-born in the United States has steadily decreased, by death and dwindling immigration. According to the census of 1910 there are now in the United States—Irish born, 1,352,155; American born of full Irish parentage, 2,141,577; American born, one parent born in Ireland and the other in the United States (in most cases the result of an Irish immigrant marrying an Irish American), 1,010,628; total of Irish birth or parentage, 4,504,360. This does not include any of the 811,000 non-French Canadians in the United States, of whom a large proportion are of Irish blood, nor any of the 876,000 coming from England, of whom also a large number are of Irish origin. Neither does it include any of the 1,177,000 American born "of mixed foreign parentage," including such parentage combinations as Irish and German, which alone probably runs above 50,000. Among the states, New York stands first with 1,091,000 of Irish birth or parentage; Massachusetts second, with 633,000; and Pennsylvania third, with 570,000. For all these figures it may be asserted that more than four-fifths are of Gaelic stock.

By the latest British census, 1911, the population of Ireland was 4,390,219, of whom all but 157,037 were native born. Of the native born about 74%, or 3,245,000, represent the old Gaelic stock. By the same census there were 375,325 persons of Irish birth then living in England and Wales, while an unofficial estimate puts those in Scotland at about 220,000, or nearly 600,000 for the whole island, which with the children of Irish parentage would probably total at least 1,500,000. The same census gives 139,434 Irish born to Australia, or perhaps 350,000 of Irish blood. South Africa and the other British colonies, exclusive of Canada, have an estimated 100,000 of the same stock, while Canada has in round numbers 990,000 of Irish birth or parentage, of whom about 750,000 are of Gaelic origin, as indicated by religious denomination. Outside the countries already named, Argentina has some 15,000 Irish born and the rest of Latin America possibly as many more, with perhaps another 15,000 or 20,000 scattered over the rest of the world. To sum up, the total Irish-born population throughout the world is now about 6,875,000, or about 1,625,000 less than the population of the home country alone in 1845, while the whole number of unmixed Irish blood may be about 16,000,000, of whom nearly 14,000,000 are of Gaelic

stock. The total Gaelic population—Irish, Scotch, and Manx—of fairly pure stock and racial identity, in every part of the world, probably numbers close to 18,000,000.

DANIEL FOLKMAR, *Secretary*.

Meeting of January 6, 1914

At a special meeting of the Society held on January 6 at the National Museum, Dr TRUMAN MICHELSON, of the Bureau of American Ethnology, delivered an address, *Notes on the Fox Indians of Iowa*. Their own native name is *Meskwa'ki'ag'*, "Red-Earths"; the French name, *les Renards*, is derived from the appellation of a single gens, *Wāgō'ag'*, "Foxes"; the English name "Foxes" is a translation of the French *les Renards*; the term "Outagamies" (and variants) is derived from the Ojibwa *Utagāmīg*, "they of the other shore." Their closest linguistic relations are first with the Sauk, then the Kickapoo, then the Shawnee, and then the so-called Abnaki tribes. They are also comparatively close to the Menominee and Cree as compared with the Ojibwa, Ottawa, and Potawatomi. The thesis that the Foxes were once an Iroquoian people and subsequently took up an Algonquian dialect cannot be substantiated. There is presumptive evidence that the Foxes were once in the lower Michigan peninsula; however, their proper history begins in the last half of the seventeenth century in Wisconsin, on the Wolf and Fox rivers. The long French wars broke out in the early part of the eighteenth century. Even the transportation of Kiala (that is *Kyanān*?) by De Villiers to Montreal, and his subsequent exile to Martinique, did not break their spirit; and De Villiers paid for his overconfidence with his life. Soon there was peace with sporadic outbreaks till Beauharnois' recall, when war began again in earnest; however, the Foxes assisted the French against the English. After the overthrow of French power in Canada the Foxes were favorable to the British interest. The fraudulent treaty of 1804 with the United States was probably responsible for the Foxes siding with the British in the War of 1812, and the subsequent troubles which culminated in the famous Black Hawk War. The Foxes claim that as a body they took no part in this; however, owing to continued disturbances with Indians and the pressure of white settlers, the Sauk and Foxes sold their remaining lands in Iowa and agreed to remove to Kansas. Nevertheless small bands of the Foxes returned continually to Iowa, and it is even likely that a number of individual Foxes never removed to Kansas. In 1856 the Iowa legislature passed a bill enabling the Foxes to settle in that state; accordingly they purchased

land with their own money, near Tama, and from time to time this has been added to until they now own about 3000 acres. The main body of the Foxes, as a matter of fact, did not leave Kansas until the outbreak of the Civil War, when Maminwānigā, the Fox chief, was unwilling to sign a proposal to allot the Sauk and Foxes in Kansas. He was deposed from his chieftainship by the agent for this reason, and went to Iowa with nearly all the Foxes, according to tradition. In 1896 the state relinquished jurisdiction of the Foxes to the Federal government, and at the same time certain claims of the Foxes against the Sauk were adjusted. There are some Foxes enrolled with the Sauk of Kansas and Oklahoma; the present population of those in Iowa is about 356.

An abstract of Dr MICHELSON's paper, *Notes on the Social Organization of the Fox Indians*, read at the New York meeting of the American Anthropological Association and largely incorporated in his present address, appears in the *American Anthropologist* for October-December, 1913, pp. 691-693.

DANIEL FOLKMAR, *Secretary*.

Meeting of January 20, 1914

At the 471st meeting of the Society, held January 20, 1914, at the National Museum, Mr WILLIAM H. BABCOCK spoke on *The North Atlantic Island of Brazil*, illustrating his address with lantern slides of early maps. North Atlantic geographical conditions were first shown by a recent current map: Attention was called to the region surrounding the Gulf of St Lawrence and to the three Brazils: that of South America; Mount Brazil in Terceira, where the old island name has been restricted to one eminence; and western Ireland, where the peasantry still believe in a great land called Brazil or Breasail west of them in the ocean. This last is probably the original Brazil, from which the others received the name directly or indirectly, it being identical with that of a mythical pagan Irish hero; also practically with that of St Bresal, otherwise Breacan, buried on the Island of Aran, where the belief in Brazil island is strongest. Outside of Ireland it first appears in the expression "grana de Brasile"—grain of Brazil—in a commercial treaty of Ferrara, Italy, dated 1193, and another Italian document of 1198.

The speaker suggested that the primary Brazil, west of Ireland, may have been the region surrounding the Gulf of St Lawrence. The maps of Dalorto 1325 and Dulcert 1339 were presented as the first showing Brazil—a nearly circular figure west of southern Ireland; the Atlante Mediceo map of 1351 for the same and also as the first one applying the

name *Brazi* or *Brazil* to *Terceira*, also the first to delineate the three sub-groups of the Azores and in particular *Corvo*, which had then substantially its modern name, and is shown brought back toward Europe a long way from its natural position. Numerous other maps, including *Giraldi* 1426, *Beccaria* 1435, *Bianco* 1436 and 1448, and *Pareto* 1455, were offered to show the constancy of this disc or full-moon form and westward position. The same is true of *Valsequa* 1439, *Fra Mauro* 1459, and a great majority of the pre-Columbian maps of the fifteenth century. The *Pizigani* map of 1367 was exhibited for this, also for its curious multiplication of *Brazils*, applying the name not only to *Terceira*, but also to an island southwest of the circular *Brazil*, the same being of approximately crescent form and called *Man*, *Mam*, or *Maida* on most maps. It also contains a pictorial record of a disastrous Breton expedition to this island, and obscure inscriptions referring to Arab voyages. The *Catalan Atlas* of 1375 and another were presented as showing an annular *Brazil* nearly in the usual position, but having for its interior an inclosed sheet of water dotted with islands, instead of the mottled interior appearance of the disc of *Dalorta* and *Dulcert*. The *Catalan* map of 1480 and that of *Prunes* 1553 were represented as instances of another and rather common type in which a channel divides the round island into two, generally from north to south and slightly curving westward in the middle. *Pinelli* 1384 was given as another aberrant form somewhat like the letter C with its opening toward Europe. These various forms indicating interior water space were explained conjecturally as imperfect realizations of the nearly inclosed and island-containing Gulf of St Lawrence, its entrances and the land-wall surrounding it; the circular form by the tendency of the time toward symmetrical outlines; the inadequacy of distance from Ireland by a minimizing tendency of the map-makers in such cases evidenced in the far too eastward positions of *Corvo* and *Greenland* on many maps. The *Catalan* map of 1480 was also referred to as apparently harmonizing two traditions by presenting both. At the far west, though too far south, it shows *Greenland*, *Illa Verde*, and just below it a second *Brazil*, large and circular. In that direction the nearest neighbor of *Greenland* is obviously lower *Labrador* or *Newfoundland*, a part of the region suggested. The map of *Coppo* 1428 was given to show an earlier instance of *Greenland* as *Isola Verde*, but in proper place, also to illustrate the treatment of western lands generally as islands. The map of *Sylvanus* 1511 and some others were given to show the transfer of the region about the Gulf of St Lawrence, as an island, eastward toward Ireland, the same performance ascribed to earlier map-makers by our conjecture.

The explanations hitherto given of the word *Brazil*, the dividing channel, and the interior water, were briefly reviewed and considered inadequate. The corroborative testimony of the Norse sagas as to Great Ireland, and the opinion of Dr Storm and Dr Fisher identifying Brazil with Markland were mentioned as best supported by the Catalan map of 1480. The alternative names Montonis (Dalorto), Montanis (Freducci), Montorius (Benincasa) or Monte Orius, also that of Binar (Bianco) were briefly considered. The general argument was summarized as indicating that some who spoke Irish reached the St Lawrence gulf and the region around it at a very early period and gave it the name Brazil, different narrators stating its salient points differently or being sometimes misunderstood.

DANIEL FOLKMAR, *Secretary*.

Meeting of February 3, 1914

A special meeting of the Society was held at 4.30 P. M., February 3, 1914, in room 43 of the new building of the National Museum, the president, Mr Stetson, in the chair, and about eighty persons present.

MISS FRANCES DENSMORE, of the Bureau of American Ethnology, read a paper on *Sioux War Songs*, using the stereopticon, the phonograph, and vocal selections in illustration of her theme. She first showed lantern slides of the prairie, where the long war drama of the Sioux was enacted, then portraits of some old Sioux warriors, and, last, a number of native drawings of war incidents. Many war customs were illustrated by the details, as well as by the subjects, of these drawings. One phonograph record of a woman's voice was given in connection with the portrait of a woman who sang a song in honor of a relative killed in war. The remaining songs were given vocally, the melodies being those sung by the Indians, but no effort was made to imitate the Indian manner of singing. Each drawing had one or more songs which were either sung at the time the incident occurred or composed in honor of the event. These songs were phonographically recorded by the men who made the drawings, and were afterward transcribed in musical notation by the writer.

It is said that the Sioux, among all the Indian tribes, were the best of friends and the worst of enemies. They were indeed men to be feared in the old days. One of their societies was well named the "Strong Hearts". They were trained from childhood to have "strong hearts", and they held to a purpose when others failed. The warriors of a certain society carried in war a lance to which was fastened the skin of a crow. When that lance was planted in the ground they dared not retreat from

it. So in loyalty to a friend or in hatred of an enemy they thrust their lance into the ground and stayed by it.

War among Indians had an aspect different from that which it has among civilized nations. It was not an occasional calamity; it more nearly resembled a steady occupation. To the individual it offered a career. A man could best become rich and honored by going to war. A man was rated according to his generosity, and having given away his goods there must be some way of securing a new supply of wealth. A war party afforded this opportunity. War was a means of revenge, and Indian revenge was a terrible thing. War was for the defense of the home, and the protection of the hunting ground which meant the food supply. Indian warfare was, after all, the physical expression of something which must always go on, only changing its form, as forces do, and passing from physical to mental battle grounds.

There was much of interest on the warpath besides the killing of enemies and the capture of horses. A war party often traveled far and brought back strange tales of distant lands. New customs were frequently introduced into the tribe as a result of war expeditions or the taking of captives.

Only a successful warrior could belong to the leading societies of the tribe, with their special tents for meeting, their feasts, and their parades, all of which were very attractive to the Indian. But the greatest reward was the right to sing of one's valor at the assemblages of the tribe.

DANIEL FOLKMAR, *Secretary*.

Meeting of February 17, 1914

The 472d regular meeting of the Society was held in the new building of the National Museum on February 17, 1914, at 4.30 o'clock, the president, Mr. George R. Stetson, in the chair. The address of the afternoon was by Mr. J. N. B. HEWITT, of the Bureau of American Ethnology, on *The Psychology of the Myth*.

A myth, said Mr. Hewitt, in part, is the utterance of savage man; it is a naïve creative concept. A myth treats of one or more of the "elder people", the familiar "first people", whom men of later times call "the gods". The subject-matter of myths is not human activity, for none relates to human beings and none treats of things done since the appearance of man on earth. A myth is fictitious only in form and letter, but it is true in substance and spirit; truth is eternal and universal. In terms of human attribute and activity myths explain, on the premises of their relators, in just what manner the present order of things arose

from one or more antecedent orders of things, and just how it is maintained.

The epos is the later dress or adornment of the mythos concept in poetic form as legend, saga, or story.

The logos is the later literary criticism—the analytic and synthetic treatment of the mythos and the epos; it is the intelligent, interpretative analysis and exegesis of the concept of the mythos; it is logical, scientific; so mythology may be defined as the logic of the mythos. The first men had only myths; and whether as cosmogony or as religion they were final, conclusive.

Hence, mythos, epos, and logos, all translatable by *word*, represent three well-defined stages of human thought in the development of opinions. Whatever, therefore, the ultimate terms or concepts may be in which man may define his gods, the process of reasoning is always quite the same; the "unknown" is defined, though perhaps quite unconsciously, in terms of the "known"; and the "known" quantity is here man, whatever this concept may signify at the time and place. The phenomena and the processes of nature are personified, and so humanized. So that all powers and functions and attributes characteristic of man—no matter whether good or evil—are ascribed to the gods in a more or less idealized form. Not only this, but the arts and the social and the religious institutions of men are in like manner unconsciously attributed to the gods; and so the social and the religious institutions of the gods are an exact reflex of the human society believing in such deities.

By so doing, men, unconsciously perhaps, in their myths and epics, gave a faithful picture of the early culture and civilization of their own ancestors. In this manner, in brief, the gods later become the *revealers* of all history, the teachers of the arts and crafts, and the founders of the institutions—human and divine—of a people. Here the true source of prophecy and inspiration is found: for these divine beings are the offspring of the interaction of the powers and phenomena of nature and the mind of man in its conscious, its subconscious, and its super-conscious activities.

DANIEL FOLEMAR, *Secretary*.

Meeting of March 3, 1914

At a special meeting of the Society held March 3 at the National Museum, MR W. E. SAFFORD read a paper on *The Pan-pipes of Ancient Peru* and exhibited specimens. Mr Safford became interested in the music and musical instruments of the ancient Peruvians during a cruise

along the western shore of South America in 1887. At Arica, near the northern boundary of Chile, he found in a prehistoric grave two sets of pan-pipes made of graduated reeds closely resembling the syrinx, or fistula, of the ancient Greeks and Romans. At Payta, Peru, he witnessed a morris dance in which the dancers kept time to a pipe and tabor very similar to those which were used in England in early times. Afterward he found in collections terracotta vases on which were depicted men playing these instruments, while others were dancing in rings or lines. Pipes made of bone similar to those observed at Payta were also found in prehistoric graves in Peru and northern Chile. Mr Safford described the manner of playing the instruments and imitated the airs played upon them. In dancing, the tabor, or small drum, was suspended from the left arm, while the pipes were held in the left hand, leaving the right hand free to hold the drumstick and mark the rhythm. The occurrence among the ancient Peruvians of a pipe and tabor very closely resembling those used in the Old World is interesting, as is likewise the transformation of an ancient Peruvian dance in which the performers wore masks, into a dance of the "Moros", or heathen Moors, before the march of Christianity. At Payta the occasion was the "Octavario de Corpus Cristi," in which a religious procession was preceded by the dancers. In place of the regulation "hobby-horse" which pranced among the dancers in ancient England, there was at Payta a hobby-bull, with horns and tail, composed of two men concealed beneath a cloth stretched on a frame.

Afterward, while acting as commissioner for the World's Columbian Exposition to Peru and Bolivia, Mr Safford was so fortunate as to observe the performance of an entire orchestra composed of pan-pipes. These were played in pairs, each performer having a mate with a corresponding complementary instrument who played the alternating notes of the scale. Two instruments were necessary for playing any melody, the first yielding the notes *mi, sol, si, re, fa, la, do*; the second producing the intervening notes *re, fa, la, do, mi, sol, si, re*. In running the scale the players would consequently alternate. That the pan-pipes of the ancient Peruvians were thus played in pairs is shown by pictures on prehistoric vases, in which two instruments are represented as being connected by a long loose string. The scale used, said the speaker, has not hitherto been understood, since the instruments in collections have as a rule been single, only one of a pair having been retained, its mate in many cases having been sent to some other collection as a duplicate. Mr Safford's observations regarding this use of the instruments in pairs appears to be new. Other observers have commented on the alternation of tones pro-

duced by the players of pan-pipes, but no one, he said, has called attention to the fact that the pipes are paired, each having its complementary mate, without which it is powerless to produce a musical scale.

The pan-pipes observed were in most cases composed of sixteen reeds, in two rows, one row superimposed upon the other, the row played upon by the performer having the reeds closed at the bottom, the outer row having reeds with an opening at the bottom. The smallest pair produced shrill notes like those of a piccolo; the middle pair, tones an octave lower, like those of a flute; the largest pair, with reeds twice as long as the middle pair and four times as long as the smallest pair, gave forth deeper tones very much like those of a barrel organ or a calliope. The alternation of notes may be compared with that yielded by the mouth organ, or accordeon, effected by expelling and inhaling the air.

DANIEL FOLKMAR, *Secretary*.

Meeting of March 4, 1914

At a special meeting of the Society held March 4 at the National Museum, DR A. B. LEWIS gave an address on his *Travels in the South Seas and New Guinea*, illustrated with lantern slides. The four years of 1909-13 were spent in the South Pacific in the interest of the Field Museum of Natural History in Chicago, studying the natives and collecting ethnological material. The region chiefly concerned was in Melanesia, which includes the island groups extending northwestward from Fiji and New Caledonia through the New Hebrides and Solomon islands to New Guinea. Many of these islands are large and mountainous, covered with a dense tropical forest, and only partially explored. Though all are claimed by different European powers, only the smaller islands and the coasts of the larger ones are under control. The traveler is perfectly safe, however, except in a few regions which are well known. Transportation is the great difficulty, and if one wishes to get away from the few settlements, it must be by small launches or sailing craft belonging to the scattered traders and planters, or by native canoes. These are of various kinds, and were illustrated by slides. In one of these canoes the speaker traveled more than a hundred miles, stopping at the native villages, sleeping in the native huts, with only natives as attendants and guides.

The condition at present varies much in the different islands; Fiji is the most civilized. The natives of Fiji are all professing Christians, and read and write their own language. Except the ordinary things of

everyday life, there is little of the old left. The native Fijian population is about 90,000, the European 3,500, while there are 40,000 to 50,000 Indian coolies on the sugar plantations. Industrially, Fiji is far in advance of any of the other groups. For years New Caledonia was a French penal colony, and the natives are reduced to about 30,000 living on reservations, much as our American Indians. The New Hebrides are under the joint rule of France and England, but some of the large islands are still wild and unsafe. To the ethnologist, Malekula is the most interesting. More than twenty languages are spoken on this one island, to say nothing of dialects. The natives, houses, and dancing grounds, with huge carved drums and wooden figures, were illustrated with views. The Solomon islands are mostly English, but two are under German control. Including missionaries, there are probably not more than 300 Europeans in the group. Some of the islands still are unsafe, even to land on the shore, except where there is a mission station or a government post. New Guinea is the largest and most interesting island of all. Except Greenland, it is the largest in the world, and the least known; for while even Greenland has been crossed several times, New Guinea has never been crossed except near the ends where quite narrow. More time was spent on New Guinea than anywhere else. A considerable portion of the coast was visited and short trips made toward the interior. There are but few Europeans in New Guinea, the greater number, about 1,000, being in the British portion of the island, known officially as Papua. A considerable number of these are gold-diggers. In German New Guinea (Kaiser-Wilhelmsland) there are about 200 Europeans, and in the Dutch portion not more than 50. The old condition of warfare among the natives has been stopped, so far as the government can extend its influence. The natives, as a rule, are friendly and hospitable. Many weeks were spent alone with them in their villages, with only native attendants. The habits, customs, and general appearance of the natives, while similar in general aspects, vary greatly in detail. Views illustrating the native villages, the people themselves with their characteristic dress and ornaments, and phases of native life, were shown from a number of different places, so that a general idea of their character and variety could be obtained.

DANIEL FOLKMAR, *Secretary.*

Meeting of March 17, 1914

At the 473d regular meeting of the Society, held March 17 at the National Museum, DR J. WALTER FEWKES delivered an address illustrated with lantern slides, on his *Egyptian Experiences*. He considered

especially the significance of certain parallelisms in cultural objects of the Stone Age from Egypt and from the Gila valley, Arizona. These resemblances he ascribed in part to the influence of an artificial system of irrigation in the evolution of an agricultural stage in development.

Dr Fewkes began with an account of the unique shape and cultural isolation of the Nile valley in Neolithic times, and showed how man was isolated by deserts which protected him from outside marauders. His social advancement, at the dawn of history, mainly due to the influx of foreign ideas from the East, can be traced to the coöperative union of clusters of villages or nomes in order more effectually to irrigate the narrow valley fringing the Nile. This coöperation of the rulers of Neolithic Egypt led to a ruler over all, or the rise of a Great House, or Pharaoh, who later became King of Upper and Lower Egypt. To the coöperation in constructing irrigation ditches may be traced a system of enforced labor, or *corvée*, in which the Pharaoh not only acquired all cultivated land and the water which alone made agriculture possible, but also controlled all the labor of the inhabitants. To these rights acquired from the rulers of the nomes in very early times may be traced the power exercised in constructing the magnificent monuments that are the world's wonders.

In Neolithic Egypt there was a succession of villages along the river, each independent of the other, like a cluster of pueblos in Arizona. The remains of architectural constructions at this early epoch still remain, and are sometimes, as at El Kab, well preserved. They are rectangular, massive, walled forts with an encircling wall of clay, not unlike the compounds at Casa Grande and the Great Houses elsewhere on the Gila in Arizona. Within these inclosures in Egypt and in Arizona were temples of mud or clay, public buildings and houses of priests, while around them were clusters of the hovels in which lived the people like the present Egyptians. The dead were buried in neighboring mounds, placed with the knees drawn to the chin and surrounded with mortuary offerings. These graves were rude excavations with floor of straw and roof of mud and boughs. Many resemblances between archeological objects from the Stone Age in Egypt and the Gila valley were pointed out. Among these are weapons, stone implements, pottery and its symbolic decoration, flat basket trays, bone and other objects. Certain common conditions of environment and the necessity for artificial irrigation had led the Stone Age people of different races, without connections, to develop a parallel culture.

DANIEL FOLKMAR, *Secretary.*

Meeting of March 24, 1914

At a special meeting of the Society held March 24 at the National Museum, DR ALBERT HALE, of the Pan-American Union, addressed the Society on *Modern Argentina*, illustrating his remarks with lantern slides.

After a brief description of the geographic relations of the Río de la Plata region, with an outline of its ethnical and anthropological conditions, the speaker traced the history of Argentina only so far as it had an immediate bearing on material progress, and then gave in detail a comprehensive glance at the present aspects of the republic, its principal cities, industries, products, and activities. One of the interesting features about the republic is that in it is repeated a development comparable with that which has been so characteristic of the United States in North America. In fact, this immense area in South America is the one most easily understood by the Anglo-Saxon who looks back upon the history of material progress and conquest in his own country.

The ethnical elements of the population may be studied in the immigration statistics of Argentina more satisfactorily than in its census. In fact, no census has been taken since 1895, when the total population was 3,954,911. In 1911 it was estimated to exceed 7,000,000. The total number of immigrants in the years 1857-1912 was 4,248,355. It is interesting to note that more than half this number, or 2,133,508, were Italians. The Spaniards were scarcely more than half as numerous as the Italians, or 1,298,122, and other European races were represented by much smaller numbers than these. The French numbered only 206,912, and the "Russians" 136,659. Next to these came a race from western Asia, the Syrians, with a total of 109,234; then the "Austrians" and "Germans" with 80,736 and 55,068 respectively. The "Britons" numbered nearly as many as the "Germans," or 51,660. The Swiss, Belgians, and Portuguese numbered about 20,000 or 30,000 each; the Danes and Dutch 7,000 each; the "North Americans" 5,500; the Swedes 1,700, and "others" 79,251.

The relative proportions of Italians and Spaniards arriving during the last year of this period, 1912, were about the same as during the entire period, or 165,662 of the former to 80,583 of the latter. It is worthy of note that the "Russians" and Syrians rose to the next two places in the list, with a total for the year of about 20,000 each. No doubt the "Russians" and "Austrians" in Argentina, as in the United States, are largely Poles and Slavs of other races than the true Russian, together with a certain proportion of Hebrews. The "North Americans"

arriving during 1912 numbered about 500. The total immigration for the year was 323,403. A high tide of immigration reached Argentina at about the same period as the United States, in the decade 1881-1890, when a grand total of 846,568 immigrants arrived in Argentina. This number was however exceeded in the last half-decade, 1906-1910, when 1,238,073 arrived in Argentina, or a larger proportion than came to the United States during that period.

DANIEL FOLKMAR, *Secretary*.

Meeting of April 7, 1914

At a special meeting of the Society held April 7 at the National Museum, SEÑOR F. A. PEZET, Minister of Peru, read a paper on *Contrasts in the Development of Nationality in Latin and Anglo-America*. Each of these populations, he said, has its special traits of character, born with the individual or developed through the environment. He first considered the relative conditions, at the time of the discovery, of the territories now known as the United States and Latin America; and, second, the type of the first settlers. The discoverers found Latin American territories organized into semi-civilized states, but Anglo-American territory occupied by savages. Two very different types came to America. The Anglo-Americans were oppressed and persecuted by religious intolerance; the Latin Americans were adventurous soldiers of fortune. The former came to build up new homes; the latter, to tear down, to destroy, and to carry away everything they could lay their hands upon. The first Latin Americans were valiant, but ignorant and unscrupulous, principally from a country where religious bigotry was rampant. They were an admixture of virtues and vices and in marked contrast to the men who came to the shores of New England. Whereas the Anglo-Americans acquired the land as settlers and drove the natives westward, the Latin American military forces overthrew native governments and established themselves as the governing class, reducing the Indians often to slavery.

While the Anglo-American settlers brought their families, the Latin Americans did not until many years after the Conquest, but took to themselves Indian women. The offspring became the mestizos, a mixed race that the pure Castilians of Spain never countenanced. Later the creoles came into existence, the offspring of European parents born in America. The mixing of races was finally encouraged by the Spanish monarchy, the idea being to create a great middle class of uniform race. Soldiers were allowed great liberty. Before the year 1800 the mestizo population

of Peru exceeded 250,000. While some mestizos received an education and were reared up with creole children, most were kept in ignorance. While Anglo-Americans readily acquired the art of self-government, our peoples did not; they knew how to rule, not how to govern. So, for more than two centuries the Europeans and the creoles ruled the mestizos and the Indians. The mestizo is nearer the Caucasian than the Indian; physically and morally he is superior to the latter. Although of less active intelligence than the European or the creole, he is more strong-willed and painstaking. In the early days the mestizo who had one parent of rank was placed on an equal footing with the creole; but as the mestizos became more numerous, the Spaniards began to distrust them and prevented them from obtaining certain social positions or much education. All these years the Indians were oppressed, even by the mestizos. After two hundred years of hatred and distrust, these elements eventually, out of sheer exhaustion, became apparently reconciled to their respective conditions. The colonial nationality which was finally evolved, was thus formed of creoles and mestizos, and might have been a beneficent one if it had had time to develop. Ideas of republicanism were adopted from the United States and from France without preparation for self-government, such as the people of the United States had. In the later nationality of the Latin American countries there were, therefore, racial divisions: the creoles and the Spaniards formed the governing class; the mestizos strove to be on an equal footing with these; and, a long way down in the social scale, came the Indians, considered inferior even to the African slaves. The same laxity permitted the mixing of the African with the other races. The Indian population, so long neglected, is now a matter of deep concern in many of the Latin American countries, for example, in Peru, where we have a large percentage of pure Indian and of mestizo blood.

DANIEL FOLKMAR, *Secretary.*

Meeting of April 14, 1914

At a special meeting of the Society held April 14 at the National Museum, MR S. M. GRONBERGER read a paper on *The Origin of the Goths*. The ancient home of the Goths was undoubtedly situated, he said, on both the northern and southern shores of the Baltic, and at the beginning of the Christian era this people had settled chiefly along the river Vistula in northeastern Germany. Previous to the Christian era (about 200-300 B.C.), another division of this race had immigrated into Scandinavia, probably across the Danish isles. Somewhat later, at the

time of the earliest Gothic movement southward, about 215 A.D., the migrants were probably joined by their Scandinavian brethren who emigrated from "Scandza" (mentioned by Jordanes, the Gothic historian), and to this period the Gothic saga of Jordanes should be assigned. This emigration of the Goths from Scandinavia was due probably to some signal defeat in the savage warfare then carried on with the Swedes, or "Svear", of the Scandinavian peninsula. Names of regions and localities in Scandinavia testify to their association with the Goths, and the names of Ostrogoths, or East Goths, and Visigoths, or West Goths, are recognized in Sweden today. Medieval Swedish history tells of constant conflicts between the Swedes and Goths, the latter of whom were the more ancient inhabitants. The two races are now merged and constitute the modern Swedish nation. The Anglo-Saxon poem "Beowulf", by an unknown author, furnishes powerful testimony as to the early home of the Goths in the Scandinavian peninsula and the Danish islands. The Baltic island of Gotland received its name from the Goths, and great numbers of Roman and Byzantine coins and other objects which have been unearthed in that island afford further proof of Scandinavian migrations. In addition to Jordanes, Cassiodorus, on whose history that of the first named was based, Tacitus, Procopius, and Paulus Diaconus, not to mention the earliest though doubtful evidence of Pytheas of Massilia (now Marseille), who had the advantage of having personally visited the regions he described, and many other Greek and Roman historians, testified to the Scandinavian or Baltic origin of the Goths. The most ancient tradition relating to the Goths was that they had come originally from Asia, the cradle of mankind, by way of southeastern Europe, under the leadership of their legendary hero and deity, Odin, or Wothan.

One of the most remarkable runic inscriptions in Scandinavia is that of the so-called Rök stone, discovered in western Ostrogothia, Sweden, which is of great importance in connection with the early history of the Goths. It contains an epitaph and dates back to 830-840 A.D., or the time of the introduction of Christianity into Scandinavia by St Ansgar. The inscription contains an allusion to Theodoric the Great, who afterward ruled as Ostrogothic King of Italy. Another part of the inscription refers to four kings of the Danish island of Zealand. The names of these four, who were brothers, and their sons, can be identified with names mentioned in Jordanes's saga. The Rök runic inscription affords one of the most important fragments of historical evidence connecting the Ostrogothic kingdom of Italy with the Goths of Scandinavia.

and contains more points of resemblance with Jordanes's saga than any other known historic source.

The evidence of relationship between the Gothic and Scandinavian languages found in modern Scandinavian tongues is also of great importance. The most essential point of resemblance between these languages is the mutual retention in certain cases of *gg* before *w* and *j* (*ggj* was changed to *ddj* in Gothic); as, for instance, in the genitive plural of Old English *twæza* (two), Danish *tvæggje*, Gothic *twaddje*, modern Swedish *twegge*. Compare also the English *true* with Swedish, Danish, and Norwegian *trygg*, Icelandic *trygr*, Gothic *triggus*.

DANIEL FOLKMAR, *Secretary*.

Meeting of May 5, 1914

At the adjourned 474th regular and 35th annual meeting of the Society held at 4 o'clock, May 5, at the National Museum, DR. EDGAR J. BARKER, field director of an expedition to Babylonia in 1903-05 under the auspices of the University of Chicago, read a paper, illustrated with lantern slides, on *Bismya; or, the Lost City of Adab*. Bismya flourished in central Babylonia throughout a period of two thousand years previous to 2000 B.C. The mounds extend a mile or more along the bed of an ancient canal, about halfway between the Tigris and Euphrates rivers, and five days' journey south of Bagdad. The highest of the mounds reach about fifty feet above the level of the desert. The surface is covered with pottery fragments. The workmen employed were Arabs of the hostile Bedier tribe. Near the surface were found bricks of the temple wall having on their under side the inscription of Dungi, King of Ur, of about 2200 B.C., and below them bricks bearing his father's name, Ur-Engur. At a lower level was found a gold inscription of Naram-Sin and bricks of his father Sargon, the first known Semitic king, of about 2800 B.C. Until recently the date of these kings was supposed to be about a thousand years earlier.

Beneath the ruins representing these Semitic kings were the traces of the earlier civilization of the Sumerians, a cultured people who had occupied Mesopotamia for several thousand years. From them the wedge-shaped characters of the language and many of the Semitic religious forms were borrowed. An important discovery was a perfect large marble statue of a Sumerian king called Lugal Da-udu of about 4000 B.C. Large numbers of stone vase fragments were found; some were inscribed with the names of the kings of the fifth millenium before Christ; others were engraved with intricate designs; and a few of them

were inlaid with ivory and bright stones. One bore the picture of the temple tower; one had the oldest representation of a musical instrument known to exist. Far down the shaft was discovered a long spike of pure copper terminating in a crouching lion. Lowest down, on the undisturbed desert level, were found large numbers of pottery fragments, showing that perhaps fifteen thousand years ago a people with considerable civilization occupied that spot. An ancient Sumerian crematory was found. It was a circular chamber with an oval platform connected with a furnace. The ashes of the dead were brushed into the pit beneath the platform. The Semite dead were buried in small house-like tombs of sun-dried bricks. In these were found the pottery to contain food and drink for the spirits of the dead; the jewelry of the women, and the seal cylinders of the men. Several palaces were found, and in them small collections of clay tablets containing the business documents of the people. In one large chamber were about five thousand of the tablets in a heap. In the residential portion of the city were found very narrow winding streets lined with houses of but a single room. Many of the houses were provided with vertical drains reaching into the ground forty feet or more, and with cisterns. Frequently there had survived the oven in which the bread was baked, the mortar for pounding the grain, the images of the household gods which were supposed to drive away disease, the toys of the children, the needles and knives of the women, and many other things necessary to life in those days. A public bath was found in the residential section of the city, provided with a vertical drain beneath the floor of bitumen, a furnace for heating the water, and a cistern high up in the building. The people of Bismya were among the oldest who have left us evidences of a highly developed civilization, and the first occupants of the place, ten or fifteen thousand years ago, were as civilized as the present occupants of the surrounding desert.

Mr James Mooney was elected President of the Society for the ensuing year, and the following officers were re-elected: Vice-President, Dr John R. Swanton; Secretary, Dr Daniel Folkmar; Treasurer, Mr J. N. B. Hewitt; Councilors: Mr Felix Neumann, Dr I. M. Casanowicz, and Mr Francis LaFlesche.

DANIEL FOLKMAR, *Secretary*.

DISCUSSION AND CORRESPONDENCE

ANCIENT LODGE SITES ON THE MISSOURI IN NEBRASKA

WITHIN the last few years several papers¹ have been published by Mr R. F. Gilder of Omaha on prehistoric earth lodges in eastern Nebraska. Under the auspices of the Peabody Museum of Harvard University I have been investigating several of these lodge sites during the last three years and have covered a territory somewhat wider than that in which Mr Gilder did most of his work. In addition, several of the sites excavated were more favorable for the observation of certain features than those in which Mr Gilder worked. These facts furnish the excuse for the present notice.

The principal feature in which my conclusions differ from those of Mr Gilder, as published in 1909,² is in the construction of the houses, and it is to this feature that I wish to call attention at the present time. In fairness to Mr Gilder, it should be stated that he has been convinced by his own later investigations³ of the correctness of my conclusions.

These lodge sites are now known to occur as far south as Union, Nebraska, and as far north as Walthill in the same state—a distance exceeding one hundred miles. At White Cloud, Kansas, there are sites which seem to be of the same type but which have not yet been investigated. The Museum expedition of the coming summer will excavate some of these and also some sites in northern Missouri. The type of lodge site here described has not been proved to exist east of the Missouri river, although several have been reported which are probably similar.

Of the five hundred or more known sites, all but four are situated either on the very tops of the highest bluffs or on the highest river terraces near their steep fronts. The spot chosen was usually one from which water would drain away on every side. Not a single site is known to exist more than three miles from the river bottoms, and very few more than half a mile away. The distance from the river to which they extend seems to be determined by the presence or absence of certain Pleistocene

¹ *American Anthropologist*, ix, pp. 702-719; xi, pp. 56-84. *Records of the Past*, x, pp. 249-259; xii, pp. 107-116.

² Excavation of Earth-lodge Ruins in Eastern Nebraska, *American Anthropologist*, 1909, xi, pp. 56-84.

³ *Records of the Past*, xii, pp. 107-116.

gravels which are the source of all the springs of the region. Where these outcrop to a considerable distance from the river, the sites likewise so extend; and conversely where the outcrops do not occur, there are no sites. The few sites not on the ridges are near springs.

With reference to each other, these sites are much scattered. Seldom are more than two or three close together, and sites isolated a mile or two from any other occur. Usually they are strung out along the ridges a hundred or more yards apart. I have been unable to discover any traces of village grouping. Indeed, on the river terraces where definite village arrangement would be likely, they are still stretched out in a long line. This would seem to indicate that the builders were originally dwellers on the ridges and occupied the terraces only at a later date. However I have been unable so far to see any difference in culture between the sites on the bluffs and those on the terraces.

The sites themselves appear on the surface of the ground as "saucer-like" depressions which are often called "buffalo wallows" by persons living in their neighborhood, and "circles" by those who know their real nature. They vary from a few inches to more than four feet in depth below the surrounding ground level. On excavation it is found that the actual house occupied but a portion of this depression, the remainder being due to surface wash.

The actual lodge was not round, like the earth lodges of the historical tribes of the Missouri valley, but roughly rectangular or very nearly square. They measure from 35 to 40 feet to the side. The corners are somewhat rounded, but for at least 30 feet the walls are perfectly straight. In many of the houses the walls have been burned to a brick-red, so that this rectangular outline can be traced with absolute certainty. Indeed, after my experience I can trace on the ground the position of the straight walls in many sites and not miss them by more than a few inches, in spite of the rounded appearance of the depressed area.

The depth to which the original excavation of the house was carried is from three to four feet below the present depressed portion of the ground. This depression is now filled with from 15 to 20 inches of material which must have collected on the floor of the lodge while it was occupied, 9 to 15 inches representing the fallen roof, and over this 12 to 15 inches of accumulated black soil. Below the floor proper and near the walls, pits or caches were dug—some as much as six feet below the floor level. These number from two or three up to 20 in a single house, and in general are somewhat bottle-shaped. Their sides are often burned, and they are frequently filled with a mixture of charcoal, ashes, and clay. Often they

are nothing more than rubbish pits, but some of them were used for storage.

There was a principal fireplace always in the center of the floor, but there were also smaller ones elsewhere. Indeed it seems that at one time or another nearly every part of the floor was so used. There does not seem to have been any excavation for the fireplace as is usual in the lodges of the Missouri river tribes.

A feature of special interest is the entrance passage. This occurs in only a portion of the lodges, the others apparently having been entered by a ladder. Where such an entrance occurs it is quite long, sometimes extending as far as 20 to 25 feet beyond the edge of the house. Its direction is not constant, but it seems to be determined by the prevailing winds and the slope of the hill. None open to the north or north-west. It has another peculiarity in that it is not inclined, as are the passageways in the lodges of the historical tribes, but is almost level. It is continued to such a distance that the natural slope of the hill will bring it to the ground level. The houses are not orientated.

The culture has been sufficiently described for the present in the papers of Mr Gilder, and only one or two points will be noted here. Of the food material, there are considerable quantities of charred grain and nuts, abundant bones of rodents and deer, but, except as implements, the bones of the bison are quite rare—a rather unusual feature for a Plains culture. The pottery shows a distinct development from north to south which will be described in a later paper. A few pieces were found which were definitely the result of trade—probably from the Red river region in Louisiana. There is no sign of contact with the white race.

The connection of these people with known tribes has yet to be determined, but it is certain that they were not Omaha nor Oto. On the present evidence, Catlin's theory of a Mandan origin can be regarded only as a myth. There are many reasons for believing they were not Pawnee nor Arikara.

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THE RED-PAINT PEOPLE OF MAINE

In the *American Anthropologist* for January-March, 1913, Professor Warren K. Moorehead describes his archeological research in Maine and tells of what he calls the "Red-paint People," whose remains were discovered there. Excepting the strange remains of the cave-people of the Ozark mountains (which also were investigated by Professor Moorehead),

nothing perhaps found in the United States in recent years, he tells us, is comparable in interest with the problem of the "Red-paint People" of the lower Penobscot valley. Unless the interest connected with the "Red-paint People" depends on considerably more than the placing of red paint in deposits, and the small proportion of remains of burials, found in the graves, it is a question if Professor Moorehead has not accorded himself overmuch praise.

Mr D. I. Bushnell, Jr, in the *American Anthropologist* for October-December, 1913, takes up this question of the "Red-paint People" and points out, among other things, that the deposit of red paint with burials and artifacts is far from being a recent discovery.

Although Mr Bushnell leaves little further to be said as to the "Red-paint People," I should like to quote from my "Certain Sand Mounds of the St. Johns River, Florida,"¹ Part I, where my investigation of the Mt Royal mound, made famous by the descriptions of both the Bartrams, is detailed.

"Beginning at the margin of the base, a layer of sand, colored by admixture of powdered hematite, covered the entire mound. This layer attained a maximum thickness of seven feet on the northeastern portion of the summit-plateau and adjacent slope. The general tint of the layer was what is called crushed strawberry by dealers in ribbons, though at many points, and especially in the vicinity of relics, the sand in considerable quantity was dyed a brick red, even reaching what is termed Indian red by vendors of colors. At times streaks and local layers of highly-colored sand throughout the entire mound led to implements, pottery, etc., and while the discovery of objects in the yellow sand was not uncommon, still in the majority of cases they lay in contact with that having an artificial color. Realizing this fact, the 21 colored men in our employ worked with their hands alone in the presence of sand tinted with the red oxide, and it is doubtless owing to this that but two objects in pottery were broken by the spade during the seventeen days comprising our investigation." (Page 19.)

Next are named three mounds in which were deposits of the red oxide of iron (a list considerably increased in later explorations), and reference is made to the late Mr Andrew E. Douglass having noticed a similar use of hematite in mounds on the east coast of Florida. Attention also is called to the caves of Mentone where Dr Rivière repeatedly found objects tinted by contact with the red oxide, while Dr Verneau encountered a layer of earth artificially colored by the use of iron ore, in which bodies had been deposited.

¹ *Journal Acad. Nat. Sci. of Philadelphia*, vol. X, 1894.

As to the condition of human remains in the Mt Royal mound, we are told, "In no mound of the St Johns have human remains been found so fragmentary through the ravages of decay, and it is probable that traces of many burials have entirely disappeared. In certain cases human remains were represented by hardened sand retaining nothing but the shape. Many fragments of bones resembled moistened powder and crumbled at the touch. Beyond a few crowns of teeth no remains were saved. It is probable that an admixture of shell with the sand of the mound would have preserved the bones to a material extent." (Page 20.)

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THE MOTHER-IN-LAW TABOO

IN a paper read before the Academy of Inscriptions, Paris, on September 8, 1911, Salomon Reinach propounded a theory of the mother-in-law taboo which may be of interest to anthropologists. The paper subsequently appeared in *L'Anthropologie* (1911, pp. 649-662) and is now reprinted in the fourth volume of the author's *Cultes, Mythes et Religions* (Paris, 1912). Reinach notes that of a total of some 65 cases of avoidances between relatives recorded in Frazer's *Totemism and Exogamy*, 43 refer to the relations of son-in-law and mother-in-law. This may thus be regarded as the "typical" avoidance. The author reviews and rejects the various theories propounded to account for the origin of the custom: the theory of Frazer, who regards the custom as a safeguard against incest between the son-in-law and the mother-in-law; the theory of Lubbock, who sees in it a survival of marriage by capture; the theory of Tylor, who explains the taboo as a reaction of the wife's family against the intrusion of her husband; and the theory of Crawley, who sees in marriage a breach of a sexual taboo which, by extension, the son-in-law applies also to his mother-in-law.

Reinach's own theory rests on two postulates: the savage does not distinguish between appearance and reality (here special reference is made to the work of Lévy-Bruhl); the horror of incest is a most powerful emotion, universal in its distribution, while the responsibility for an incestuous act falls mainly on the male. We may assume that the husband's residence with his wife's people is, like maternal descent with which it is correlated, a more ancient practice than paternal descent and the wife's residence with her husband. It is to be expected that on his installation in his wife's household the husband would soon be on

terms of familiarity with her mother and presently would learn to call her "mother". The suggestion of actual blood-relationship carried by that term would not fail to react on the view taken by his mates of his marital union: if his wife's mother is his mother, incest has been committed; he has married his own sister. In order then to discourage all suspicion of incest, it is best to avoid *all* relations with one's mother-in-law, to ignore her. "Thus," concludes Reinach, "avoidance of the mother-in-law seems to me to be nothing else but an emphatic, categorical denial of the possibility of incest between brother and sister: the definitive proof that my wife is not my sister lies in the fact that I do not know, refuse to know, her mother; and that the latter professes a similar attitude toward me."

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ARROW-CHIPPING BY MEANS OF FIRE AND WATER

FOLLOWING is a quotation from a communication by Ed. Nagle, an old fur-trader of the far north of Canada, who is now in British Columbia, addressed to Mr Frederick W. Godsal of Cowley, Alberta, regarding the flaking of stone arrowpoints among the Athapascan Indians of Great Bear Lake, Mackenzie Territory:

"I am sure you have given up all hopes of hearing from me on flint arrow heads question; but I was simply trying to find out for certain how they manufactured these arrow points from the rough, and here it is. I sent to Edmonton for my note book used while on a trip to Great Bear Lake, and here are my notes: 'Flint is not chipped with stone or with metal, but with water. When an Indian wished to make an arrow head he held a piece of flint in the fire until it was very hot, then allowed a drop of water to drip from the end of a stick upon the spot to be chipped off.' The sudden cooling made the flint chip off immediately; some cunning is of course necessary in the shaping of the arrow head, but the old Indian method is the best that has been found as yet. When I wrote you previously to this it was an arrowhead made from a slate stone, which the Esquimeaux use in place of flint for boys."

ANTHROPOLOGIC MISCELLANEA

Wyoming Historical and Geological Society.—Although the Wyoming Historical and Geological Society of Wilkes-Barré, Pennsylvania, may be classed among the local scientific organizations of the country, by reason of the fact that its activities are properly restricted to a limited field, there is probably no society that is doing better work of its kind or that is covering the ground in a more intelligent and enthusiastic manner. Organized in 1858, during those troublous times when scientific endeavor was retarded rather than stimulated owing to stress of political conditions, the Wyoming Historical and Geological Society has continued its work without cessation, and during the period of its existence, extending over more than half a century, has reared a lasting monument for itself and for learning. The publications of the Society include thirteen volumes of *Proceedings and Collections* and twenty-five miscellaneous pamphlets, which are replete with valuable historical and scientific data, including papers on ethnological and archeological subjects. Its collections include 26,000 Indian artifacts, of which all but about a thousand are from the Susquehanna watershed in Pennsylvania. The library of the Society consists of 20,000 volumes not duplicated by any library in northeastern Pennsylvania; the membership numbers nearly 400 (including 207 life members), and its invested endowment funds exceeded \$53,000. A special endowment fund of \$1,000 provides for the publication of an annual ethnological paper, and the Coxe Publication Fund of \$10,000 guarantees the annual volume of *Proceedings and Collections*. It is thus shown that the Society is in a most prosperous condition, thanks largely to the personal interest and activity of its corresponding secretary and librarian, the Reverend Horace Edwin Hayden, who has contributed unstintingly of his time and energy to the work of the Society.

In 1912 the Society published volume XII of its *Proceedings and Collections* under the Coxe Publication Fund, and volume XIII has just been issued. These two attractive volumes contain the usual share of articles of ethnological and archeological interest. In volume XII are papers by the Reverend W. M. Beauchamp on "Iroquois Pottery and Wampum" and by the Reverend Horace Edwin Hayden on "Echoes of the Massacre of Wyoming, No. 2," and Christopher Wren's "Some Indian Graves at Plymouth, Pennsylvania." Volume XIII includes Mr

Hayden's "Echoes of the Wyoming Massacre, No. 3," and "A Study of North Appalachian Indian Pottery," by Christopher Wren. These papers, of course, are in addition to numerous others of a strictly historical or geological interest, which need not be mentioned here.

Mr Beauchamp's paper, above mentioned (vol. XII, pp. 55-68, 3 pl.), published at the expense of the Augustus C. Laning History Fund, treats of two phases of material culture that are always of interest and to which the author has devoted many years of study. In the continuation of his "Echoes of the Massacre of Wyoming" (vol. XII, pp. 69-104, pl.; vol. XIII, pp. 124-130) Mr Hayden speaks with authority and presents a series of historical documents bearing on certain participants in the massacre of 1778, which thus are preserved for future students of this bloody episode in Pennsylvania history. Mr Wren's article on "Indian Graves at Plymouth" (vol. XII, pp. 129-204, 3 pl.) gives historical references to and the results of excavations in an Indian burial place. The second paper by Mr Wren, above cited (vol. XIII, pp. 131-222), describes and illustrates, with thirty plates and numerous figures, the Indian pottery of eastern Pennsylvania, northern New Jersey, and southern New York, and is an extension of the results of the studies embodied in his paper on "The Aboriginal Pottery of the Wyoming Valley Region," printed in volume IX of the *Proceedings and Collections*. The memoir is introduced with a brief account of the potteries of Palissy and Wedgwood, followed by a "Chronology of pottery and china making in Europe." A description of the Appalachian region of Pennsylvania is given, and a general account of the principal features of the aboriginal pottery of the area, including materials used, form, method of manufacture, size, thickness, decoration, uses, and age. The greater part of the work is devoted to descriptions of the plates illustrating earthenware objects, which afford an adequate conception of the character of aboriginal pottery from the area treated. The collection of Algonquian pottery in possession of the Wyoming Historical and Geological Society is said to be the finest in existence.

F. W. H.

John Brown Dunbar, an authority on the Pawnee Indians, died at Bloomfield, New Jersey, on March 12. Mr Dunbar's father, the Reverend John Dunbar, a native of Massachusetts, was sent as a missionary to the Pawnee in 1834, and settled at Bellevue, Nebraska, nine miles above the mouth of the Platte, the leading post and agency nearest the Pawnee country, where the son was born, April 3, 1841. During his

missionary labors the father learned enough of the Pawnee language to enable him, when he returned to Massachusetts for a visit in 1836, to have printed at Boston a small elementary book in the Pawnee tongue which was afterward used by the children in the missionary school. The son received his primary education from the father, spent one year at Hopkins Academy, Hadley, Massachusetts, and was graduated from Amherst in 1864. He served in the Civil War successively as private, sergeant, and lieutenant of artillery in Nims' battery, a year of the time being spent in Louisiana and nearly two years and a half in Virginia. From 1869 to 1878 he held the chair in Latin and Greek in Washburn College, Topeka, Kansas, and while here married Miss Alida Stella Cook. After leaving Topeka, Professor Dunbar served for three years as superintendent of the public schools of Deposit, New York; subsequently he filled a similar position for sixteen years at Bloomfield, New Jersey, and in 1897 became connected with the Boys' High School in Brooklyn, New York, although retaining his residence at Bloomfield. Professor Dunbar was deeply interested in philology, and in the early history and exploration of the general region of his birth. In 1872-73 he assisted Father Gaillard, of St Mary's Mission, Kansas, in the preparation of a Grammar and Dictionary of the Potawatomi language, which remains unpublished. He also compiled, but not published, a brief grammar and partial vocabulary of Pawnee. Among Dunbar's published writings are the following:

The Decrease of the North American Indians. *Kansas City Review of Science and Industry*, September, 1880.

The Pawnee Indians. *Magazine of American History*, April-November, 1880; November, 1882.

The Pawnee Language. In Grinnell, G. B., *Pawnee Hero Stories and Folk Tales*.

Professor Dunbar rendered cheerful and valued aid to numerous students of American ethnology, including Brinton, Grinnell, and Shea, and to various institutions. He left a number of incomplete manuscripts which doubtless contain much information on the Pawnee, with whom he was brought into such intimate contact during his early life.

General James Grant Wilson, soldier, author, died in New York on February 1. General Wilson was born in Edinburgh, April 28, 1832, but his family settled at Poughkeepsie, N. Y., during his infancy, and in that city he spent his childhood and youth. He received an academic education and also instruction by private tutors (D.C.L., St Stephen's College, 1894; L.H.D., Hobart College, 1895), and in 1857 founded and

edited the *Chicago Record*, said to be the first magazine of art and literature published in the Northwest. Five years later he entered the army as a major in the Fifteenth Illinois Cavalry; he took an active part in Grant's Vicksburg campaign, and in 1863 became colonel of the Fourth Regiment of United States colored cavalry, serving under General N. B. Banks from 1863 to 1865, and being breveted a brigadier-general of volunteers, March 3, 1865, "for faithful and meritorious services." He resigned in the following June. From the close of the war General Wilson was engaged in literary work in New York, the product of which, covering military history, biography, and other historical topics, is voluminous. He was a leading spirit in a number of organizations having for their purpose the advancement of the interests of literature, history, and genealogical and biographical study, and took a prominent part in important movements looking to civic progress. In 1894 he was knighted by the Queen Regent of Spain for his services in having a statue of Columbus erected in Central Park, New York. General Wilson became an active member of the American Ethnological Society in 1887, and when the Society was rehabilitated in 1900 he was made its president, which office he held until shortly before his death, when he was elected honorary president.

Cornplanter Medal for Iroquois Research.—On February 28, 1914, the Cayuga County Historical Society of Auburn, New York, conferred the "Cornplanter Medal for Iroquois Research" on Mr J. N. B. Hewitt of the Bureau of American Ethnology, Washington, D. C., for his work in the field of Iroquois anthropological study. The medal is of silver, and its artistic finish represents the excellent handiwork of Tiffany and Company of New York. The Cornplanter medal was founded in 1901 largely through the efforts of Professor Frederick Starr of the University of Chicago and the public spirit of a number of his friends who aided in providing the necessary means. The administration of the Cornplanter medal for Iroquois Research was then undertaken by the Cayuga County Historical Society. Four classes of workers are eligible to receive it, namely: (a) Ethnologists making worthy field-study or other investigations of the Iroquois; (b) Historians making actual contributions to our knowledge of the Iroquois; (c) Artists worthily representing Iroquois life or types by brush or chisel; (d) Philanthropists whose efforts are based on adequate scientific study and appreciation of Iroquois needs and conditions. Those who have previously received the award of the medal are, in their order, General John S. Clark, of Auburn, N. Y.; Rev. William

M. Beauchamp of Syracuse, N. Y.; Dr David Boyle of Toronto, Canada; Hon. William P. Letchworth, and Reuben Gold Thwaites.

Frazer Fund for Social Anthropology.—It has been suggested that the completion of the Third Edition of *The Golden Bough* might give the many friends and admirers of its author, Dr James G. Frazer, a fitting occasion for offering him some token in recognition of his great services to learning. It is therefore proposed that a Frazer Fund for Social Anthropology be established to make grants to traveling students of either sex, whether connected with a university or not, with a view to their investigating problems in the culture and social organization of primitive peoples, a department of Anthropology which Dr Frazer has always been eager to promote. This proposal affords an opportunity to that wide public, both at home and abroad, whose interest has been stimulated by Dr Frazer's work, to coöperate in doing honor to a student whose reputation is world-wide and whose speculations, founded on an immense accumulation of facts, have affected the main current of thought in several important subjects. It is also proposed that, in order to secure continuity of administration, the fund be held in trust by the University of Cambridge, and that the grants from it be made by seven managers, representing the various anthropological schools of the country. All persons interested in anthropological research are invited to join the committee, of which Mr F. M. Cornford, Trinity College, Cambridge, is the secretary and treasurer. Contributions to the fund may be sent either to him or to the "Frazer Fund Account," Messrs Barclay & Co., Mortlock's Bank, Cambridge, England.

Margaret Elliott, the clan matron of the Iroquois, died on the Six Nations reserve, Ontario, on April 6, in her 95th year. Mrs Elliott was a daughter of Chief John Smoke Johnson, who was speaker of the council of the Six Nations for many years, and it is said that it was he who caused the burning of Buffalo in the War of 1812. Johnson laid the corner-stone of the Brant monument at Brantford, Ontario, in 1886, and died three weeks afterward, aged nearly 94. By the death of Margaret Elliott her tribal duties fall upon her niece, Mary Jacket Hill. Her sons J. M. W. Elliott and James Elliott, both chiefs, survive her.

THE following illustrated lectures have been announced by the University Museum, Philadelphia: February 21, Dr George Grant MacCurdy, of Yale University, "The Dawn of Art." February 28, Dr A. B. Lewis, of the Field Museum of Natural History, Chicago, "Four Years Among the Islands of the South Seas." March 7, Professor

Walton Brooks McDaniel, of the University of Pennsylvania, "Catullus and Lake Garda." March 14, Professor Masaharu Anesaki, of the Imperial University, Tokyo, "Japanese Art." March 21, Professor James H. Breasted, of the University of Chicago, "Through the Cataracts of the Nile, or Camp and Caravan in Ancient Ethiopia." March 28, Professor Breasted, "Egyptian Art."

INTENDING visitors to Madrid are informed that the Museum of Archeology and Ethnology is closed for alterations and will remain so till the end of the year or longer. The famous Sahagun manuscripts are also unavailable. The portion at the Academia de la Historia is said to have been sent to Seville for the exhibition which takes place there in the autumn. The volume belonging to the Biblioteca del Rey "has been placed in the reserve." After refusing any inspection of it, the Director now states that, as an especial favor, it might be seen twice for three hours "pues no es posible distraer para este asunto, por más tiempo el personal de la Real Biblioteca." ADELA C. BRETON

PROFESSOR GEORGE GRANT MACCURDY, of Yale University, delivered the fourth of the winter series of public lectures under the auspices of the Pennsylvania State Museum and the Harrisburg Natural History Society at Harrisburg, Pa., on January 31. He lectured on "The Antiquity of Man in the Light of Recent Discoveries." On March 10th Professor MacCurdy completed a tour of the eastern Canadian circuit where he lectured on "The Dawn of Art," by invitation of the Archaeological Institute of America, at St. John, Halifax, Quebec, Montreal, Ottawa, Toronto, and Hamilton. He also gave two lectures at Rutgers College on March 25 and 26, one before the New Jersey State Microscopical Society on "Primeval Man," the other before the Phi Beta Kappa Society on "The Dawn of Art."

THE CAHOKIA MOUND ASSOCIATION was organized at St. Louis on March 13th, with Dr. H. W. Whelpley as president. The legislative committee of the Association has recommended that a tract of not less than seventy acres be included in the limits of a proposed park surrounding the Cahokia mound group, which Congress will be asked to reserve as a national monument, but it is hoped that eventually an area of 750 acres will be reserved for the permanent preservation of this important archeological landmark.

SIR AUDEL STEIN, superintendent of the frontier circle of the Archeological Survey of India, has been deputed by the government of India to resume his archeological and geographical explorations in Central

Asia and westernmost China, in continuation of the work he carried out between 1906 and 1908. For his journey to the border of Chinese Turkestan on the Pamirs he is taking on this occasion the route which leads through the Darel and Tangir territories, which have not been previously visited by a European.

THE department of anthropology of the American Museum of Natural History, New York City, has offered a course of four lectures dealing with the social and religious customs and beliefs of primitive peoples. On January 8 and 15, Dr Robert H. Lowie lectured on "Social Organization," and on January 22 and 29 Dr Pliny E. Goddard lectured on "Religious Observances" and "Religious Beliefs."

PROFESSOR V. GIUFFRIDA-RUGGERI has been elected a corresponding member of the Société Imperiale des Amis d'Histoire Naturelle, d'Anthropologie et d'Ethnographie of Moscow. Professor Giuffrida-Ruggeri has recently been appointed professor of ethnology in the Real Istituto Orientale of Naples, under the Royal Ministry of Colonies, the only colonial institute in Italy.

MRS HUNTINGTON WILSON has established for the year 1914 a lectureship in eugenics, and has placed a fund of \$2,500 for the purpose in the care of the Eugenics Record Office at Cold Spring Harbor, N. Y. Mr A. E. Hamilton, of Clark University, has been appointed to this lectureship and will be available for colleges, societies, and clubs.

ALPHONSE BERTILLON, founder of the system of identifying criminals by means of anthropometry, died in Paris on February 13 at the age of 60 years. He added luster to a name already made famous by his father, a noted ethnologist and demographer, associated with Broca in the founding of the Paris Society of Anthropology.

It is stated that the Maharaja Scindia of Gwalior is giving special attention to the archeological relics and treasures in his state, and is taking steps to create an archeological department in Gwalior. In furtherance of this object he has sought the advice and cooperation of the director-general of archeology in India.

A NEW scientific monthly, devoted to the growth of the human child and adolescent, has appeared at Saint-Raphael (Var), France, under the name *Croissance*. It is edited by Dr Paul Godin, well known through his extensive researches on human growth and development. The yearly subscription is six francs.

THE death of Dr Edward Singleton Holden, astronomer and librarian of the United States Naval Academy at Annapolis, on March 15, recalls

to students of Maya hieroglyphs his "Studies in Central American Picture-writing" published in the First Annual Report of the Bureau of Ethnology in 1881.

THE *Société Impériale des Amis des Sciences Naturelles, d'Anthropologie et d'Ethnographie*, of Moscow, celebrated its semicentenary October 15-28, and on August 27 held a fête in honor of the seventieth anniversary of the birth of its president, Professor Dmitri Nicolaïevitch Anoutchine.

ADOLPH FRANCIS ALPHONSE BANDELIER, distinguished authority on Spanish American archeology and early history, and lecturer in Columbia University, died in Seville, Spain, on March 19, aged seventy-four years. An extended account of Bandelier's life and activities will appear in the next issue.

DR HENRY FAIRFIELD OSBORN of the American Museum of Natural History and Columbia University, New York, has delivered the Hitchcock lectures for 1914 at the University of California, his subject being "Men of the Old Stone Age in Europe: their Environment, Life, and Art."

DR A. B. LEWIS, assistant curator of African and Melanesian ethnology in the Field Museum of Natural History, Chicago, delivered an address at the Museum, November 22, on The Joseph N. Field South Pacific Expedition.

THE *Société Paléontologique et Archéologique de l'Arrondissement Judiciaire de Charleroy*, France, celebrated its fiftieth anniversary on October 5, when an archeological excursion was made by its members and guests.

THE Tenth Session of the *Congrès Préhistorique de France* will be held at Aurillac (Cantal), from August 23d to 29th, under the presidency of M. Pagès-Allary. The general secretary is Dr Marcel Baudouin, rue Linné 21, Paris.

DR Albert N. Gilbertson will have charge of the instruction in anthropology at the University of Minnesota in the absence of Dr Jenks, who is traveling in Europe and Africa.

RECORDS OF THE PAST, volume XII, part v, consists of a table of contents, an index of the illustrations, and a general index of the first twelve volumes of the series.

A LECTURE was delivered on October 7 at the University of Birmingham by Professor Arthur Keith, F.R.S., on "The Present Problems Relating to the Antiquity of Man."

THE Imperial Society of the Friends of Natural History, Anthropology, and Ethnology, of Moscow, has elected Professor W. M. Davis to permanent membership.

PROFESSOR GEORGE GRANT MACCURDY of Yale University has been elected a corresponding member of the Numismatic and Antiquarian Society of Philadelphia.

MR F. W. HODGE, of the Bureau of American Ethnology, has been elected an honorary member of the Sociedad Científica Antonio Alzate of the City of Mexico.

DR CLARK WISSLER has been elected vice-president of the Section of Anthropology and Psychology of the New York Academy of Sciences for the ensuing year.

THE old Château at Les Eyzies (Dordogne) has been purchased by the French Government and will be converted into a museum of prehistoric archeology.

DR J. WALTER FEWKES, of the Bureau of American Ethnology, has been elected a member of the National Academy of Sciences.

THE Vienna Prehistoric Society was recently founded with Professor Moritz Hoernes, of the University of Vienna, as its president.

THE hundredth anniversary of the foundation of the Indian Museum, Calcutta, is to be celebrated next February.

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ENTRANCE TO "LA COMBE"



LOOKING ACROSS THE VALLEY FROM "LA COMBE"

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LA COMBE, A PALEOLITHIC CAVE IN THE DORDOGNE

BY GEORGE GRANT MACCURDY

INTRODUCTION

DURING the summer of 1912, after having completed a tour of the paleolithic caves of France and Spain, I found myself in the picturesque little village of Les Eyzies with a desire to know more about troglodite culture and two or three weeks still at my disposal. I had always wanted to explore a Quaternary cave. Knowing this, Peyrony came to my rescue. Some five years previously he had made a sounding near the entrance to the small cave of La Combe (Dordogne) about one hour's walk to the south of Les Eyzies, and had found enough in the way of flint chips and bones to warrant further search. Moreover within the cave Peyrony, Peyrille, and young Casimir Mercier, son of the proprietor, had each found several specimens, including a bone point with cleft base, several perforated shells, and a polishing stone. The perforated shells and polishing stone later came into possession of Professor Max Verworn of Bonn, Germany; while I obtained through purchase from Peyrony and Mercier the bone point and a few flint implements.

I obtained a lease of the cave, and with two workmen, Marcelin Berniche and Casimir Mercier, began excavations on August 5th. Our route lay southward. We crossed the Beune and paralleled the narrow valley of La Gaubère to its source near the village of La Mouthe, that gave its name to the cavern in which Quaternary mural art was discovered by Rivière in 1893. From La Mouthe a

foot-path leads over a land elevation and down to the brink of a narrow valley, La Combe (meaning "little valley"), extending in a westerly direction and tributary to the Vezère, only a few kilometers distant. At this point the little valley is almost precipitous along its northern boundary. At the top of the escarpment and less than a hundred meters above the stream bed are a number of caves, one of which is called La Combe. It has a southwestern exposure and is on the property of François Mercier whose farmhouse is at the bottom of the valley trough.

Berniche accompanied me from Les Eyzies where he had arrived the same morning from Les Combarelles some two kilometers to the east of Les Eyzies. It was his father who sold the cavern of Les Combarelles to the French Government for a national monument after paleolithic engravings had been discovered on its walls. Berniche had to his credit a wide experience in cave exploration, having been employed in that capacity for more than twenty years. For the last four years he had worked for Dr Lalanne at the famous rock shelter of Laussel; he was in fact the lucky workman who uncovered the remarkable bas relief of the female holding a bison horn.

On our arrival at La Combe a few lusty calls brought Casimir Mercier with his tools and the key to the cave; for the entrance had been walled up and the cave used as a storehouse. We began excavations outside the present limits of the cave proper and in line with the sounding made by Peyrony, who had sunk a pit to a depth of 1.6 meters. This pit we sank an additional 60 c., finding flint flakes, very few of which had been retouched. The deposit is dark yellow to reddish loam. At a depth of 2.2 m. we struck a pure, stratified sterile layer of sand of brighter yellow than the loam. A smaller pit was sunk in the sand 1.2 m., and a bar of iron was driven an additional 40 c. without reaching rock bottom. The sand deposit is of Tertiary age. The original pit was more than 3 m. outside the shelter of the overhanging rock at the entrance to the cave. From this as a point of departure the deposits were removed section by section in the direction of the entrance. The stone wall (west of the door) and door that guarded the cave entrance

were finally removed so that the excavations might continue uninterrupted to and within the cave proper (pl. XII).

The cave has a depth of 7 m., a width of 5 m., and a maximum height above the floor accumulations of some 2 m. It is the distal remnant of a cave that originally had a depth of about 30 m. The roof exposed to the surface had fallen in ages ago. A ground-plan

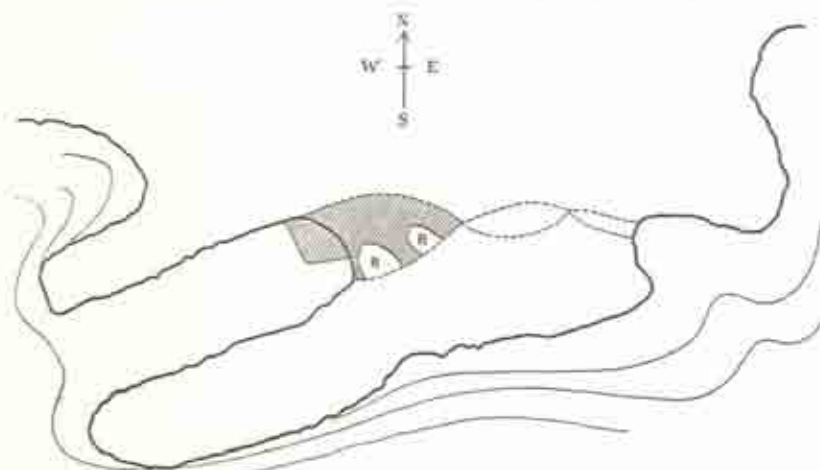


FIG. 9.—Ground-plan of La Combe. (R, R, large rocks.)

(fig. 9) will give at least a partial idea of the present and past history of the cave as well as its relation to the escarpment. The jambs of what was once the cave entrance are seen in the lower half of plate XII, which is a view looking across the valley of La Combe to the south.

The section just outside the entrance to the cavern revealed the following components, beginning at the top:

- | | |
|---|-------|
| 5. Surface soil | .2 m. |
| 4. Yellow clay, Aurignacian industry | .5 m. |
| 3. Yellow clay, Mousterian industry with <i>coups de poing</i> common | .6 m. |
| 2. Reddish sandy clay, Archaic Mousterian industry with colithic facies | .5 m. |
| 1. Sands . . . Tertiary | |

Both within the cave and outside the entrance *foyers* had been sunk by barbaric races. Not only because of the color but also on

account of the presence of potsherds and post-paleolithic kitchen refuse these black hearths were easily distinguishable from the yellow Aurignacian deposits into which they were sunk. In one or two cases they penetrated even into the Mousterian layer proper, thus bringing potsherds in close contact with *coups de poing*. Some hearths were superposed on other older hearths. The pottery dates from the first to the eleventh century A. D.

ARCHAIC MOUSTERIAN

To begin with the oldest industry, we found in the layer of red sandy clay many non-utilized flint chips and bone fragments. The flints that could be called artifacts were somewhat rare in comparison. The patination was pronounced and the angles were often reduced by wear due to transport or use. If found in valley deposits these flints would easily pass for eoliths. The notched scraper or spoke-shave is the most common type (fig. 10). This old industry at La Combe resembles that in the lowest horizon at

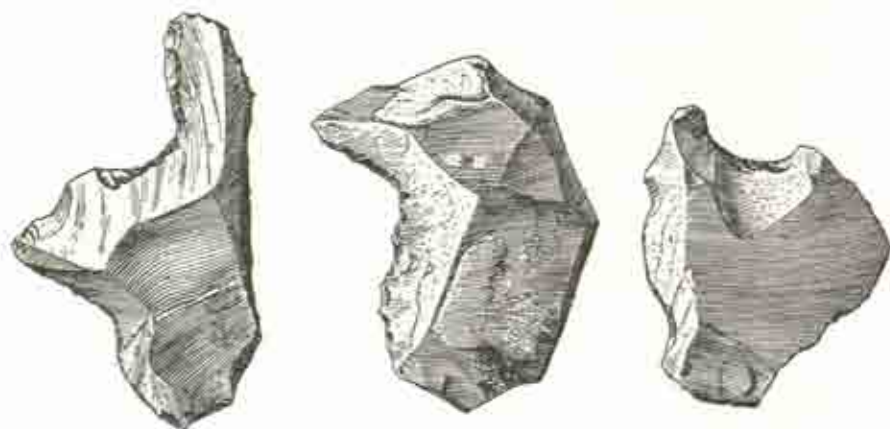


FIG. 10.—Notched scrapers or spoke-shaves. Archaic Mousterian. (3)

La Micoque, but the specimens from La Micoque are not so worn. It resembles even more closely the lower layer in the classic station (upper terrace) of Le Moustier, the layer immediately below the level of the typical Mousterian points and side scrapers. At Le Moustier the worn condition of many of these archaic specimens is

likewise to be noted. Breuil reports a similar industry from the base of the floor accumulations of the small entrance (the one not at present used) at Font-de-Gaume. The eolithic type of cave industry was also found by Rutot in the cavern of Fond-de-Forêt, Belgium; and by Schmidt in the lowest culture-bearing layer at Sirgenstein, southern Germany.

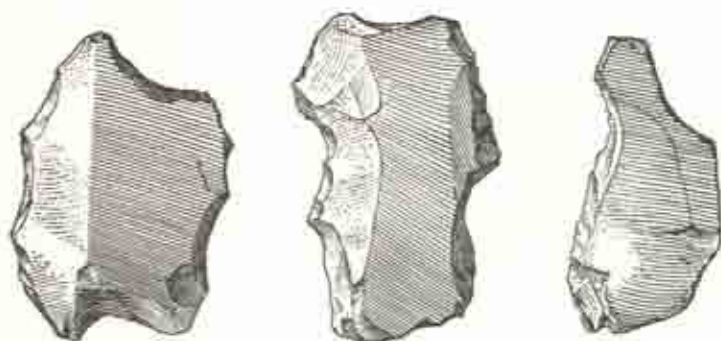


FIG. 11.—Utilized and retouched flint chips. Archaic Mousterian. (1)

The race that left the Archaic Mousterian industry was either lazy and careless or else incapable of producing anything but indifferent results in the way of chipping flint. The nodular crust shows on many of the specimens and a lack of method is manifest in the retouching or working of flint flakes (fig. 11). The result is that the chipping often shows on the bulb or inner surface of the flake instead of the outer surface or back, where one would expect to find it. In some specimens one margin is chipped from the bulb side and the other from the back. Certain nodules from which flakes have been detached resemble rude Chellean forms (figs. 12 and 13). These were found at the top of the Archaic Mousterian layer. One rude implement made from a quartzite pebble (fig. 14), the only one of its kind, was found near the base of the Archaic Mousterian deposit. The typical Mousterian side scraper and point as well as the *coup de poing* do not occur in the Archaic Mousterian layer (No. 2). In this lower layer were found curious points with thick squarish base (fig. 15). Here also was found a fragment of a large bone (*Bison* or *Bos*) that had seen extensive

service as a chopping block or compressor (fig. 16). Utilized bones of this class first came into general notice¹ through the researches of Dr Henri Martin in the Mousterian of La Quina (Charente),



FIG. 12.—Flint core resembling a rude Chellean implement. Archaic Mousterian. (1)

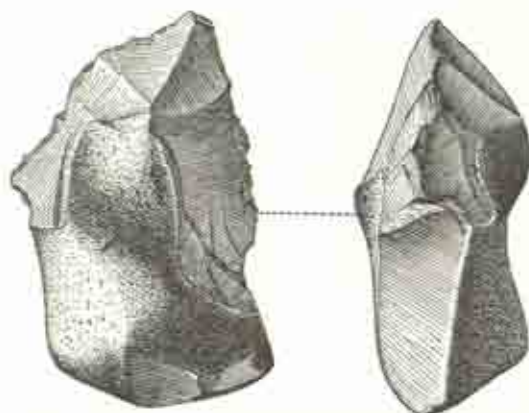


FIG. 13.—Flint implement of pre-Chellean type. Archaic Mousterian. (1)

where they are very abundant. They have also been found by Pittard at a station in the valley of Les Rebières (Dordogne), and

¹ Many years ago Dupont discovered utilized bones associated with Mousterian stone industry in the cave of Hastière, Belgium.

elsewhere by others. The bone compressors found by Martin and Pittard are however associated with upper Mousterian stone

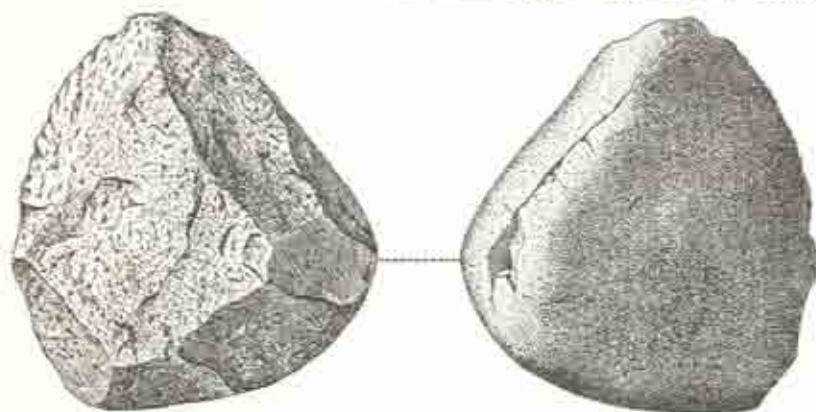


FIG. 14.—Rude quartzite implement. Archaic Mousterian. (1)

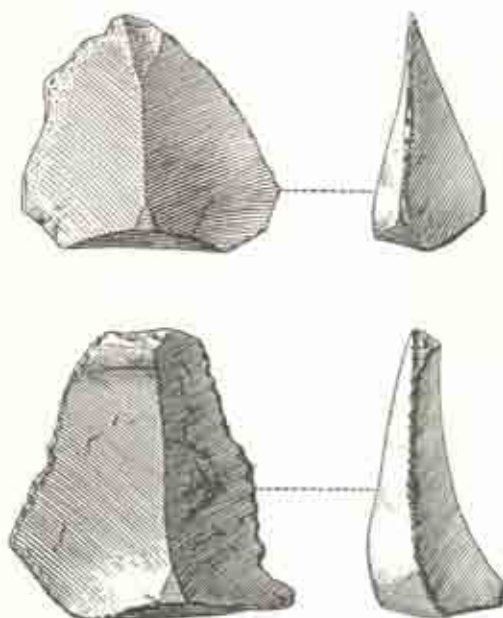


FIG. 15.—Archaic Mousterian points. (1)

industry characterized by the side scraper and the point. The specimen from La Combe came from the base of the Archaic Mousterian. After the termination of my work at La Combe I

visited Professor Commont at Amiens and learned that he had recently found similar bone compressors in the gravel pit of Boutmy-Muchembled at Montières, a suburb of Amiens. This pit is in the lowest or fourth (youngest) terrace. The utilized bone fragments were found in a whitish gravelly deposit below the recent loess and associated with Mousterian industry and a warm fauna. Commont believes the deposit to date from the Riss-Würm interglacial epoch. Montières and La Combe therefore would seem to prove that bone compressors were in use during the ancient archaic Mousterian phase.

TYPICAL MOUSTERIAN

Immediately above the reddish sandy layer is a thick deposit of yellow clay, the lower half of which contains typical Mousterian industry and the upper half Aurignacian industry. There is no perceptible intervening sterile layer.



FIG. 16.—Bone compressor. Archaic Mousterian. (1)

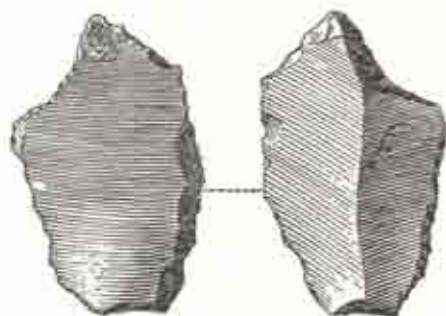


FIG. 17.—Archaic Mousterian form from the base of the typical Mousterian layer. (1)

Near the base of the Mousterian proper one still encounters scattering specimens of the archaic types common to the layer of reddish sandy clay beneath (figs. 17 and 18). At the middle and upper Mousterian levels are found the classic side scraper (*racloir*)

and point, as well as a relatively large number of *coups de poing*, usually rather small and of the Acheulian type; the largest of these has a maximum length of 12 c. and the smallest 4.8 c. The collec-

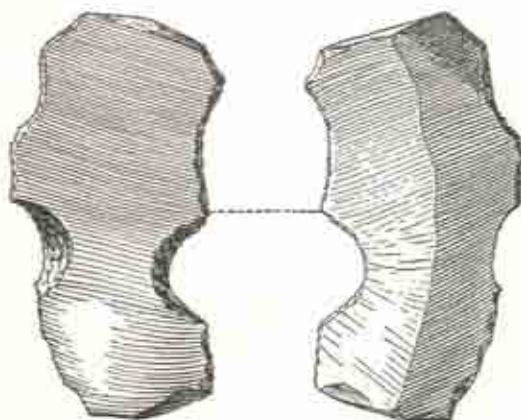


FIG. 18.—Archaic Mousterian type from the base of the typical Mousterian layer. (1)

tion from La Combe comprises some 30 *coups de poing*. This type of specimen is rare in the deposits of caves and rock shelters. In the great station of La Ferrassie (Dordogne), for example, the finding of a *coup de poing* is an event of unusual importance.

On the last day of our excavations and within a few minutes of closing time Berniche found one of the finest *coups de poing* that ever came from a paleolithic cave (fig. 19). It was found in situ at a depth of less than a meter from the surface. The specimen is intact; the flint is of excellent quality and from the heart of a nodule, as indicated by the small bit of nodular surface (near the base), the plane of which is perpendicular to the plane of the length-and-breadth axis of the specimen. The work is done with a delicate sense of symmetry. The implement is more pointed than the typical *limande* of the valley deposits in northern France, resembling more in form and workmanship a late Acheulian implement found by O. Herman in 1906 at Miskolcz, Hungary. The Hungarian specimen is however considerably smaller than the one from La Combe. Within a few centimeters from the fine specimen we found

another *coup de poing*, larger and of much cruder workmanship. The flint of which it was made was likewise of poorer quality. In

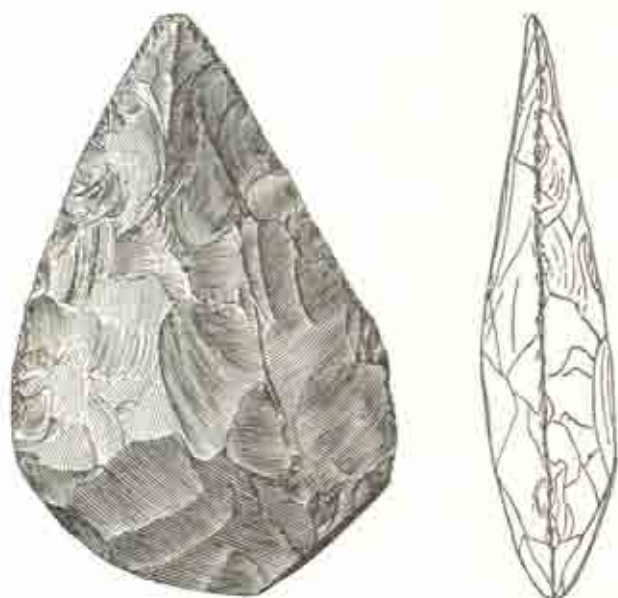


FIG. 19.—*Coup de poing* from the typical Mousterian layer. (1)

the Mousterian layer were found flint drills and hammerstones of which figures 20 and 21 are good examples. The hammerstone is a water-worn quartzite pebble and is abraded at several points.

In both the archaic and typical Mousterian horizons were found small, carefully selected, nearly spherical pebbles of which figure 22 is a good example. The presence of these so-called balls, or spheroids, of which some were at least artificially shaped in part, has been noted in numerous deposits of Mousterian (and even pre-Mousterian) age. One of the first to mention them was de Rochebrune as early as 1866. Chauvet illustrates examples from the Charente and elsewhere. Martin reports the finding of 76 calcareous spheroids at the Mousterian station of La Quina (Charente). At Les Robières I, a Mousterian station in the Dordogne, Pittard found a curious association of balls in groups of three. The balls thus grouped were nearly always of quartzite. He also found

calcareous spheroids, many of them pecked into shape. There are several theories regarding the use to which these stone balls were put. Were they gaming stones, or did they serve a more practical



FIG. 20.—Flint drill. Typical Mousterian. (1/1)

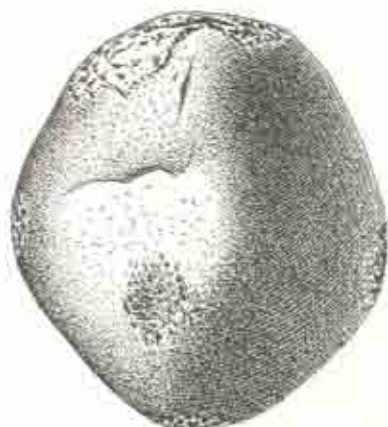


FIG. 21.—Hammerstone of quartzite from typical Mousterian layer. (1/1)

purpose as sling-stones, or perhaps bolas similar to the weapon in use among the natives of the southern part of South America? Darwin describes two kinds of bolas. One consists of two round stones, covered with leather and united by a thong about eight feet long; the other kind has "three balls united by thongs to a common center." The finding by Pittard of these balls in groups of three favors the presumption that bolas of the triple-ball type were used by the Mousterians of western Europe. The bolas had been lost or laid aside intact, but the skin covering and uniting thongs have long since decayed, leaving the three balls in a tell-tale position.



FIG. 22.—Selected pebble from the typical Mousterian layer. (1/1)

AURIGNACIAN

As has been said, there was no sterile layer separating the Mousterian horizon from the Aurignacian. The latter was the

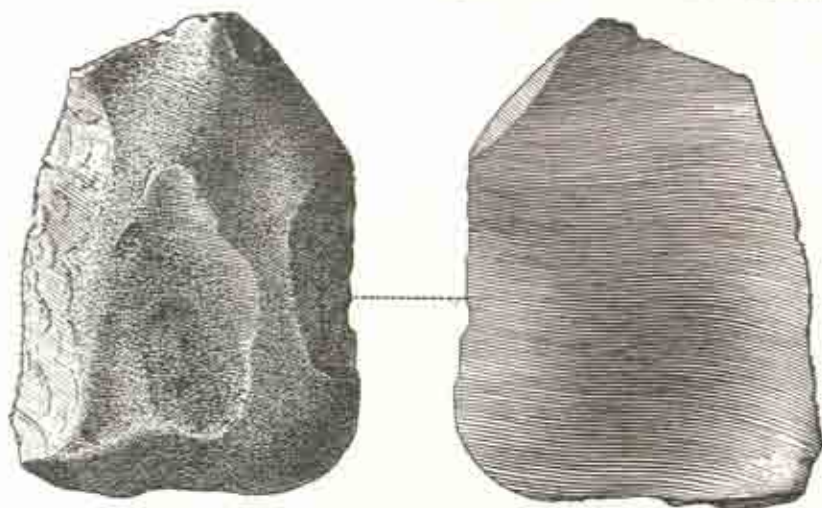


FIG. 23.—Side scraper from the typical Mousterian layer. (1)

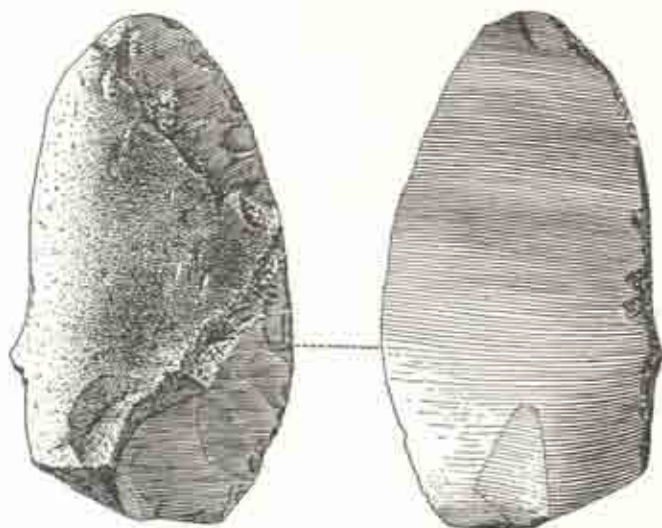


FIG. 24.—Side scraper from the typical Mousterian layer. (1)

last paleolithic occupancy of the cave. There seem to be no types representing the earliest and latest phases of Aurignacian culture.

The oldest distinct lithic type is the Châtelperron blade (fig. 25), which first made its appearance near the summit of the lower Aurignacian. On the whole the industry is typical or middle Aurignacian. The combination graver-perforator reproduced in figure 26 seems

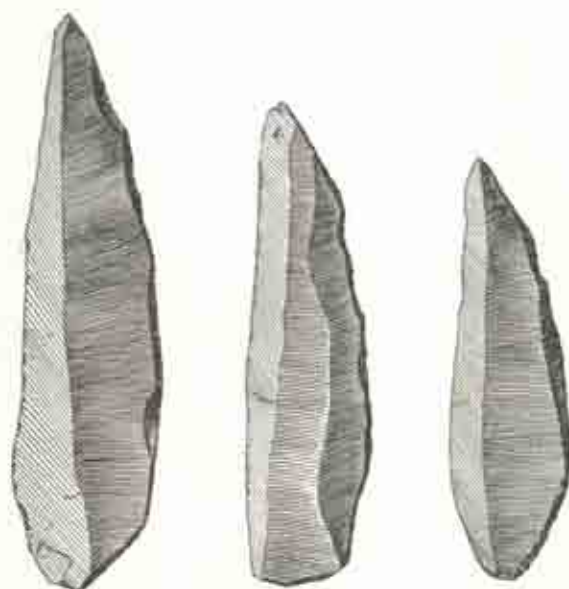


FIG. 25.—Châtelperron blades from the Aurignacian layer. (1/1)

to be of an early type; but those represented in figure 27 are not earlier than the middle Aurignacian, and the lateral graver with notch (fig. 28) is even suggestive of the upper Aurignacian. Many splinter-like chips produced in the manufacture of graters were found in the Aurignacian deposit. Implements of the type shown in figure 29 were rather common. One end of the blade-like flake is chipped to a point; while the other is rounded by chipping to form an end scraper. The lateral margins are retouched. The working shows only on the outside of the flake.

A remarkably fine flint blade (fig. 30) was found in a gently oblique position. It measures 15.2 c. in length and is made of a yellowish flint similar to the well-known "beeswax" flint of Presigny-le-Grand (Indre-et-Loire). The base is square. The right



FIG. 26.—Combination graver-perforator. Aurignacian epoch. (1/1)



FIG. 27.—Flint gravers. Aurignacian epoch. (1/1)

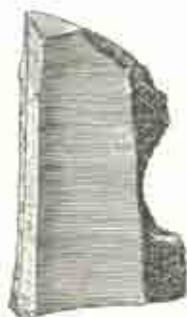


FIG. 28.—Combination graver and spoke-shave. Aurignacian epoch. (1/1)



FIG. 29.—End scrapers. Aurignacian epoch. (1/1)

margin is retouched for its entire length, as is also the left margin for more than 2 c., thus giving to the blade a distinct point. The left margin is likewise retouched for a space of 4 c. beginning at



FIG. 30.—Long pointed flint blade, Aurignacian epoch. (3)



FIG. 31.—Flint knives. Aurignacian epoch. (1)



the base. The only secondary working to be seen on the inner or nuclear face of the blade is on the left margin from 3 to 6 c. below the point.

Flint knives similar to the larger one in figure 31 were common. Carinate scrapers (fig. 32) were comparatively rare.

A number of crude hammerstones were found in the Aurignacian deposit. The quartz pebble reproduced in figure 33 is a good

example. Slight abrasions centrally located on each side seem to indicate that this specimen might have served also as an anvil stone. A flat elongate pebble from a fine-grained crystalline igneous rock is one of the smallest anvil-stones (fig. 34) found at La Combe.

In comparison with the primitive Mousterians the Aurignacians were men of new ideas, practical as well as esthetic. In the early

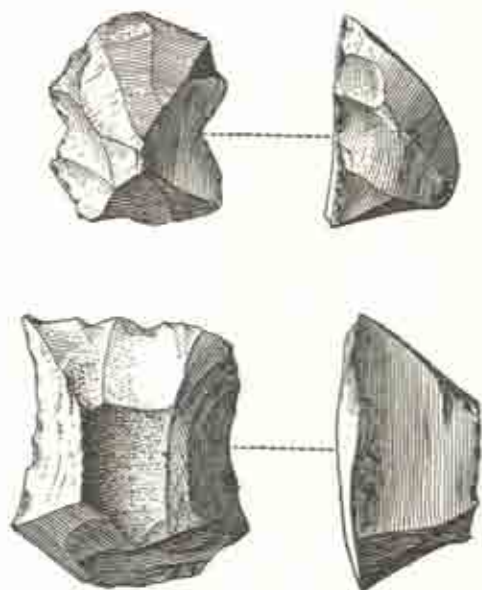


FIG. 32.—Carinate scrapers. Aurignacian epoch. (1)

days of the science it was customary to speak of the two grand divisions of the Stone Age as the period of chipped stone implements and the period of polished stone implements. Later the terms paleolithic and neolithic came into general use, and fortunately so, since the terms formerly employed had become misnomers for two reasons. In the first place perhaps more than half of the neolithic stone implements were never polished; and secondly stone objects of undoubted paleolithic age bearing marks of the polishing process have been reported from various stations, including Les Eyzies, Laussel, La Ferrassie, and La Combe, to mention only the Dordogne.

The art of polishing bone in paleolithic times is a phenomenon of common occurrence and need not enter into the discussion here. For some reason not easily explained it never occurred to any of the paleolithic races to polish flint implements. In fact the polishing process in paleolithic times, so far as stone is concerned, seems to have been wholly incidental and not a means to an end. The

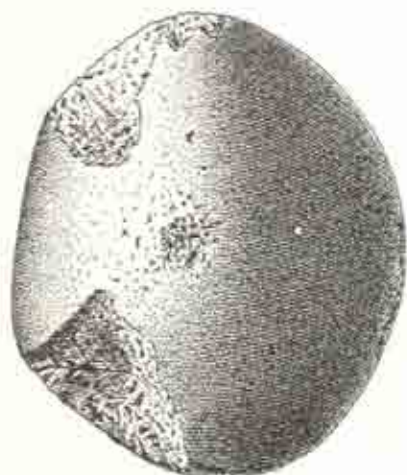


FIG. 33.—Hammerstone of quartz. Aurignacian epoch. (1)



FIG. 34.—Pebble used as an anvil stone. Aurignacian epoch. (1)

abrasions on a primitive hammerstone and anvil stone are the results of their use as such and not of their manufacture. This is likewise true of the polished facets on the upper and nether rubbing- or grind-stone; and the constant polishing of bone needles would finally leave grooves in the stone on which the work was done.

A fine example of the rubbing stone (fig. 35) was found in situ within the cave on the western side and at a depth of 50 c. from the surface of the cave deposit. It is a weathered, slightly flattened oval water-worn pebble from a rock of igneous origin. The opposite sides are much reduced by polishing; the pebble had been extensively employed evidently as the upper or active rubbing

stone. In the center of each polished surface are two groups of scars. The pebble had therefore been used as an anvil stone or a



FIG. 35.—Combination rubbing stone, hammerstone, and anvil or chopping block. Aurignacian epoch. (J)



FIG. 36.—Granite pebble that had served as a rubbing stone. Aurignacian epoch. (J)

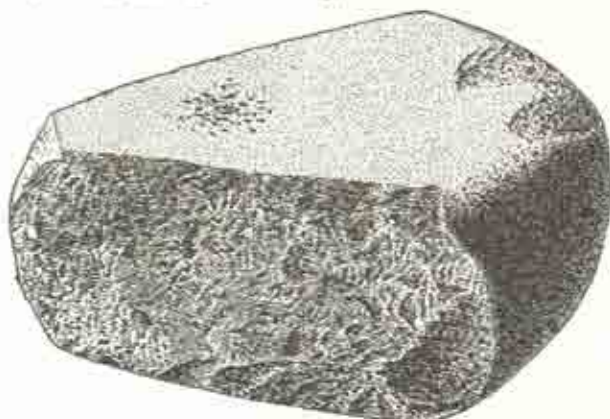


FIG. 37.—Combination passive rubbing stone and chopping block. Aurignacian epoch. (J)

chopping block. The battered ends and the bruised condition of one of the margins prove that the pebble had likewise functioned

as a hammerstone. The relation of the contused to the polished surfaces establishes the fact that the implement had last served as a rubbing stone. A few weathered granite pebbles that had been employed as active rubbing stones were found. One of these is reproduced in figure 36. In figure 37 is represented a fragment of what must have been a rather large nether or passive rubbing stone. It has a thickness of 6 c. Both sides bear evidence of extensive wear. The piece was likewise employed as an anvil stone. It is a compact fine-grained granitoid rock.

That paleolithic man was quick to seize upon objects in nature that bore a resemblance to some cherished or familiar form is at-



FIG. 38.—Perforated effigy stone resembling a bird's head.
From the Aurignacian layer. (4)

tested by numerous examples dating from various epochs. There are in the first place the flints which fortuitously or otherwise resemble animal forms familiar to man. Examples may be found

in almost any ancient gravel bed. They might well have attracted the attention of early man. Whether they did or did not is a question that has not yet been definitely answered. Whether a freak of nature may also be classed as a fetich depends entirely on human association. If found in a place of human habitation, and especially if nature's work has been supplemented in some unmistakable way, all reasonable doubt is removed. For example, Peyrony found, in the Aurignacian layer at La Ferrassie, a flint



FIG. 39.—Bone point with cleft base. Aurignacian epoch. ($\frac{1}{2}$)



FIG. 40.—Bone polishers. Aurignacian epoch. ($\frac{1}{2}$)

nodule bearing a marked resemblance to a human cranium with the two orbits, nasal bridges between, etc. In addition some of the asperities had been artificially removed, thus enhancing the likeness. Examples might be cited dating from times long subsequent to the paleolithic. For example, Flinders Petrie found in a

prehistoric temple at Abydos ape figures in terra-cotta and ivory; also pieces of stone rudely blocked out to suggest baboons. With them was a single unworked flint nodule of suitable size and shape, which "seems to have been kept for its likeness to a baboon." In the Aurignacian layer at La Combe we found a calcareous rock roughly shaped like the head of a bird with short beak (fig. 38). The eye is represented by a perforation presumably natural and apparently rendered somewhat more shapely by artificial means. This piece would have made an excellent hammerstone, but it was evidently preserved for less prosaic uses. The original crust of the rock is everywhere intact except for a slight chip removed from the base of the neck.



FIG. 41.—Piece of worked ivory.
Aurignacian epoch. ($\frac{1}{2}$)



FIG. 42.—Perforated toe-bone of the reindeer. Aurignacian epoch. ($\frac{1}{2}$)

Implements of bone and horn were rare, there being but a single point with cleft base, typical of the beginning of the middle Aurignacian (fig. 39). Three bone polishers are shown in figure 40. The largest was evidently made from the rib of some large animal. Only one piece of ivory was encountered, an implement cut from near the center of the tusk (fig. 41).

Among various phalanges of the reindeer one first phalanx of

the inner functional digit (III) of the right foot has a squarish and what seems to be an artificial perforation near the proximal end (fig. 42).

The Aurignacians are known to have been a race of surprisingly artistic ability. And they accomplished what they did without a background of art inheritance: for their predecessors, the archaic Mousterians, left nothing that might be called art in the strict sense—only utilitarian artifacts. Any efforts they might have made along artistic lines were of a perishable nature and have completely disappeared. The presence of bits of ochre and oxide of manganese in deposits of Mousterian age at numerous stations suggests the practice of painting or tattooing the body; at all events the use of red and black coloring matter for purposes ceremonial, magical, ornamental, or otherwise; for many of the pieces were genuine crayons with worn facets. Peyrony reports the finding of mineral colors not only in the Mousterian layers at La Ferrassie, Pech de l'Aze, Tabaterie, and Combe-Capelle, but also in practically every Mousterian deposit excavated by him. It is possible therefore that the fine arts had their birth in man's love of color (as well as of form) and that the old Neanderthal race made at least a beginning in that field. Certain it is that the love of ornament is at least as old as, if not older than, the fine arts.

At La Combe several fragments of ocher were found, especially in the Aurignacian level. The Aurignacians were in fact the first to leave a permanent record in the fields of sculpture, bas relief, engraving, and painting. It is a pity their robes and shields of bison skin could not have survived; for both offered fitting surfaces for embellishment. No art objects, either portable or mural, were found at La Combe, but various ornaments were encountered. The canine of a stag with the root worked down on both sides and perforated, and with three tally marks on the side of the crown, is reproduced in figure 43.

A large incisor of the stag is grooved near the end of the root (fig. 44). The dentine has been cut away in such manner as to leave a distinct shoulder in the direction of the root end only. In the end of the root there is the beginning of a conical perforation.

Perforated animal teeth were quite extensively employed as a means of ornament during the upper paleolithic period. So far as I have been able to ascertain, no perforated human teeth have hitherto been reported from a European paleolithic cave. My surprise and satisfaction were both great, therefore, on finding one such tooth at La Combe. It is a large lower left first or second

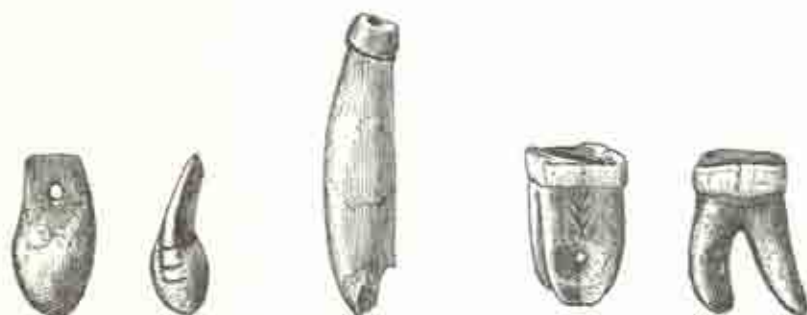


FIG. 43.—Perforated canine tooth of the stag bearing tally marks. Aurignacian epoch. (1/1)

FIG. 44.—Grooved incisor of the stag. Aurignacian epoch. (1/1)

FIG. 45.—Perforated human lower molar tooth. Aurignacian epoch. (1/1)

molar with unusually large and spreading roots (fig. 45). On the front face of the anterior root is a conical hole that passes entirely through the root. The posterior root being in the way, no attempt was made to bore from the other side. It should be remembered that perforated teeth almost without exception have but a single root. Above and leading to the hole are a number of distinct incisions, and below the hole is a short gutter leading to the tip of the root. The tooth has been submitted to a number of experts (A. Hrdlička, J. W. Gidley, G. S. Miller, G. A. Dorsey, F. A. Lucas, W. D. Matthew, and Roy Andrews), all of whom agree that it is human. Dr F. C. Baldwin of New Haven, a dentist, is of the same opinion. He has extracted molar teeth as large as the one from La Combe and with roots perhaps equally spreading.

While the use of human teeth as ornaments seems to have been very rare indeed among the paleolithic cave-dwellers of Europe, the practice was more common in the New World, especially in South America. Many human teeth with perforated or worked

roots, evidently once serving as ornaments, were found at Sacshuaman, Peru, in 1912, by the expedition in charge of Professor Hiram Bingham of Yale University.

Parts of the human skeleton are known to have been adapted as objects of adornment or utility both in the Old World and the New. At the cave of Le Placard (Charente), M. de Maret found several cranial calottes that had been so fashioned as to serve as drinking cups. They are of Solutrean and Magdalenian age; some of them were recently published by Breuil and Obermaier. Small bone disks cut from the walls of the human cranium, some of them perforated for suspension, have been found in French stations dating from the neolithic period.

In the Edwin Harness Mound of Ohio, Mr W. C. Mills gathered interesting data bearing on the use of the human jaw, both upper and lower, as an ornament. Examples of the lower jaw are more frequent than of the upper. A mandible with a perfect set of teeth was selected, the ascending rami broken away and a hole bored on each side of the symphysis. In one instance where three incisor teeth were missing, they had been replaced by incisors of the deer. The long roots of the deer incisors were cut off so that the teeth might fit properly in the human sockets. The ascending rami of this particular specimen were left intact save for notches cut near the neck, indicating that the jaw was suspended from this point. The coronoid process is also slightly worked, "and parts of the body of the jaw show polishing and cutting." The superior maxillary was converted into ornaments by cutting away the bone from the face well above the alveoles and leaving the palate intact. The posterior palatine canals served as perforations for the suspension of the jaw; these had been enlarged by boring.

There was something in the white smooth enamel of teeth, both human and animal, that appealed to the primitive esthetic sense. It was no easy matter to make the perforations preliminary to the stringing or otherwise suspending. The teeth in situ reproduced in a measure the desired effect and removed the necessity of making the perforations. Hence the use of the jaw with its already strung teeth. The jaws of other animals, such as the mountain lion, black

bear, and wildcat, were used in the same manner. Since primitive races are not well versed in comparative anatomy, it is probable that parts of the human anatomy were employed sometimes unwittingly. The replacing of human incisors by deer incisors would seem to favor such a view.

At the Roebuck site, eight miles from Prescott, Ontario, Mr Harlan I. Smith recently found both tools and ornaments made of human bone. The proximal half of a human ulna, for example, was converted into a bone punch. Several circular disks, some four inches in diameter and cut from the human cranium, were each perforated in several places evidently in part at least for purposes of suspension. The site is thought by Smith to be Iroquoian.

Among the most notable examples of appropriating human bones for decorative purposes were reported by Putnam and Willoughby from the Hopewell and Turner mounds in Ohio. The incised pattern on pieces of the human femur from the Hopewell mound and on an ulna from the Turner mound are elaborate and evidently of special symbolic as well as decorative import.

The perforated teeth, including one human molar to which reference has already been made, prove that the art-loving Aurignacians were likewise fond of ornament. Pendants of bone and ivory, as well as perforated shells, were objects of personal adornment. So far as shells are concerned, both bivalves and univalves were employed, the latter however predominating. The cave men used not only shells of existing species, but also fossil shells from the Miocene Faluns of Touraine. At La Combe we found only one perforated shell of a bivalve, that of *Arca* (fig. 46). Of univalves we discovered more than a score. Some of these are in a fragmentary condition, so that it is not possible to say whether they had been perforated or not. They include *Littorina littorea* (fig. 47), *L. obtusata* (fig. 48), *Purpura lapillus* (fig. 49), *Turritella* sp. (fig. 50), *Nassa*, and *Natica*; all are marine forms evidently brought from the Atlantic ocean more than 160 kilometers to the westward. Ac-



FIG. 46.—Perforated shell of *Arca*. Aurignacian epoch. (1/1)

according to Professor A. E. Verrill they resemble the forms still living in English waters of the North Sea.¹ The perforations are



FIG. 47.—Perforated shells of *Littorina littorea*. Aurignacian epoch. (1/1)



FIG. 48.—Perforated shells of *Littorina obtusa*. Aurignacian epoch. (1/1)

usually round, some however are in the shape of slits made evidently by sawing back and forth (fig. 48).

Some of the graves in the caves of Mentone are marked by a prodigality in the use of shell ornament. The skeleton found by Rivière in the cave of Cavillon was accompanied by perforated shells to a number exceeding 200 on the skull and 41 about the



FIG. 49.—Perforated shells of *Purgula lapillus*. Aurignacian epoch. (1/1)



FIG. 50.—Perforated shell of *Turritella* sp. Aurignacian epoch. (1/1)

leg-bones just below the knee. Immediately over the skeleton of a child discovered by Rivière in the *Grotte des Enfants* were more than a thousand shells of *Nassa neritea* that had evidently been attached to a belt. The adornment of the men was even richer than that of the women, as noted by Verneau in the cave of Barma Grande.

RECENT HEARTHS

Five recent hearths were encountered at La Combe. Two of these were outside the cave proper, two were just within the cave

¹ Deshayes had previously noted that *L. littorea* shells from Cro-Magnon resemble closely the same species now living in northern waters.

and underneath the stone wall placed there by the present proprietor, and one well within the cave. These hearths were all recognized by their black color and the loose disturbed condition of the deposit. In one were a few fragments of a very coarse-grained poorly fired kind of pottery, parts of at least two vessels. One of these has a thickness at the rim of 12 mm., the other 18 mm. The curvature proves that the vessels must have been of large size. Judging from the straight squarish finish at the rim the walls of the vessels must have been approximately vertical. They were left here in Gallo-Roman times by a barbaric race. The pottery from the other hearths is comparatively fine-grained, well-fired, and turned on the wheel. It represents types that were common from the III to the XI century A. D.¹ There are fragments of three vessels dating from the V or VI century. The walls are thin, the bottom flat, the sides rounding, with a body diameter much greater than that at the gracefully recurved rim. In one of the three there is a relief ornament on the shoulder produced by pressure of the finger-end against the interior. There is a quantity of iron rust on the rim of this particular sherd. In two of the hearths were fragments of large pitchers of terra-cotta ware. The short spouts are bridged at the rim, and the vertically placed loop handles are especially strong. This type belongs to the Middle Ages from the VIII to the XI century.

FAUNA

The fauna² of the Archaic Mousterian includes the horse, *Bos primigenius*, *Cervus elaphus*, and *Capra ibex*. The first three of these recurred in the typical Mousterian, where we likewise found *Ursus spelæus*, *Sus scrofa*, *Arctomys marmotta*, and fox. The Aurignacian faunal remains comprise the wolf, *Ursus spelæus*, *Cervus elaphus*, *Sus scrofa*, *Bos primigenius*, *Capra ibex*, and reindeer.

CONCLUSION

In a summary of the results at La Combe two features stand out prominently: (1) The Archaic character of the oldest industry

¹ Determination by M. Pages-Allary.

² For the greater part identified by Dr George F. Eaton.

represented by quantities of rude implements with eolithic facies; (2) the relative abundance of *coups de poing* in the typical Mousterian layer. In excavating this paleolithic cave the author had two purposes in view, both of which were realized. The lesser of these, the systematic gathering of an authentic collection, is by no means unimportant. The chief object was a personal test of the European system of paleolithic classification. The absence at La Combe of distinct alternating sterile layers increased the difficulties in the way of a clear-cut demonstration. To any one familiar with the problem, however, the sequence was unmistakable: Archaic Mousterian, typical Mousterian, and Aurignacian.

Any lingering doubt due to the obscurity of the conditions at La Combe was dispelled by personal tests made at other stations. One day was spent at the rock shelter of La Ferrassie (Dordogne) in company with Messrs Capitan and Peyrony, the lessees. There the sequence is visible at a glance, owing to the comparative darkness of the relic-bearing deposits. Beginning with the Acheulian, I found a *coup de poing* after five minutes' work with my steel hook. Later I gathered in turn typical specimens from the successive horizons—lower and upper Mousterian, and lower, middle, and upper Aurignacian.

At the cave of Castillo, near Puente Viesgo, northern Spain, where I spent two weeks with Professor Obermaier (in charge of the excavations), the sequence is equally clear and even more comprehensive. The section has a total thickness of about 13 meters composed of alternating sterile and relic-bearing layers, the latter numbering twelve. Beginning with the oldest, they are: three layers of Mousterian age, four Aurignacian, one Solutrean, two Magdalenian, one Azilian, and one eneolithic, the last representing the transition from the neolithic to the age of metals. It will thus be seen that in a single station there is represented nearly the entire system of a classification, which is likewise justified by a comparative study of many stations.

YALE UNIVERSITY

NEW HAVEN, CONNECTICUT

THE RUINS OF ESPIRITU PAMPA, PERU

By HIRAM BINGHAM

IN July, 1911, while visiting Don Pedro Duque in Santa Ana, in the Province of Convención, Department of Cuzco, Peru, I learned that in 1902 a local prospector, named Lopez Torres, said he had seen some Inca ruins in the *montaña* at a difficult place to reach, named Conservidayoc. Lopez Torres had died, and I could find no one, either in Santa Ana or in the village of Vilcabamba, the nearest village of any importance to Conservidayoc, who had seen the ruins or who had even been near them.

Thanks to the coöperation of the government officials, however, we succeeded in finding some Indians in the village of Pampaconas, near Vilcabamba, who had been in Conservidayoc. Enlisting their services as guides and carriers, we descended the hitherto unmapped Pampaconas river for four days, most of the time on foot over a trail that was impassable for dogs or mules.

At the end of a difficult journey in a country where there is extremely little flat land, we found, at an elevation of about 3,300 feet above sea level, a small alluvial plain. It was called Espiritu Pampa, or Pampa of Ghosts, and was covered with dense forest and jungle (fig. 60). A few members of the Campa tribe of savages (figs. 55-58) had made some recent clearings. The region was called Conservidayoc, a Spanish-Quichua hybrid meaning a place possessing the quality of preservation.

In one of the clearings we located the ruins of a village which had eighteen or twenty primitive circular dwellings. All that remained were walls from two to three feet in height with a single opening. The measurements of these ruins are given in the accompanying table.

These houses were arranged in an irregular group. In the woods not far away there seemed to be the remains of other circular

houses of about the same size, with walls from three to four feet in height.

House Number	Shape	Dimensions	Remarks
1	Round	Diameter 15 ft.	
2	Spade-shaped	21 ft. X 16.5 ft.; "handle" 10 ft. wide	
3	Round	Diameter 15 ft.	
4	"	" 15 "	Contained fragments of Inca pottery
5	"	" 18 "	Contained Inca potsherds
6	"	" 17 "	
7	Nearly round	" 21 "	
8	Rectangular	13 ft. X 19 ft.	
9	Oval	16 " X 35 "	Contained Inca potsherds scattered about the floor
10	Round	Diameter 18 ft.	
11	"	" 21 "	Contained potsherds
12	Roughly circular	" 15 "	
13	"	" 15 "	
14	Round	" 16 "	Contained potsherds
15	"	" 16 "	" "
16	"	" 18 "	" "
17	Apparently semi-circular		Very ruinous condition
18	Round	Diameter 16 "	Contained potsherds

On a promontory above this alluvial plain was a rectangular ruin of Inca style about 12 ft. X 14 ft. Leading from it down to the plain we noticed the remains of a stairway nearly a third of a mile in length made of rough blocks of stone, the steps being four to five feet in width, the risers about a foot in height, and the treads a foot and a half deep.

Half an hour's walk from the ruined village of circular houses is a place called Eromboni Pampa, where there are several terraces and a long rectangular building, 192 feet in length and 24 feet in width, with twelve doors in front and twelve behind, the doors being about 3.5 feet in width. The building was in a ruinous condition, none of the roof remaining, much of the walls being almost totally destroyed, and none of the stone lintels of the doorways being in place. One section of the wall appeared to have been plastered with mud. Near here was a fountain with three short spouts (pl. XIII, 3), somewhat resembling the fountain mentioned by Squier and Bandelier on the Island of Titicaca.



1. INTERIOR OF BUILDING H, SHOWING DOOR AND NICHE IN NORTHERN CORNER



2. INTERIOR OF FRONT WALL OF BUILDING H, SHOWING SMALL VENTILATORS NEAR TOP OF WALL



3. TRIPLE FOUNTAIN AT ESPIRITU PAMPA WITH THREE ROUGHLY CARVED WATER SPOUTS
(Photographs by Hiram Bingham)



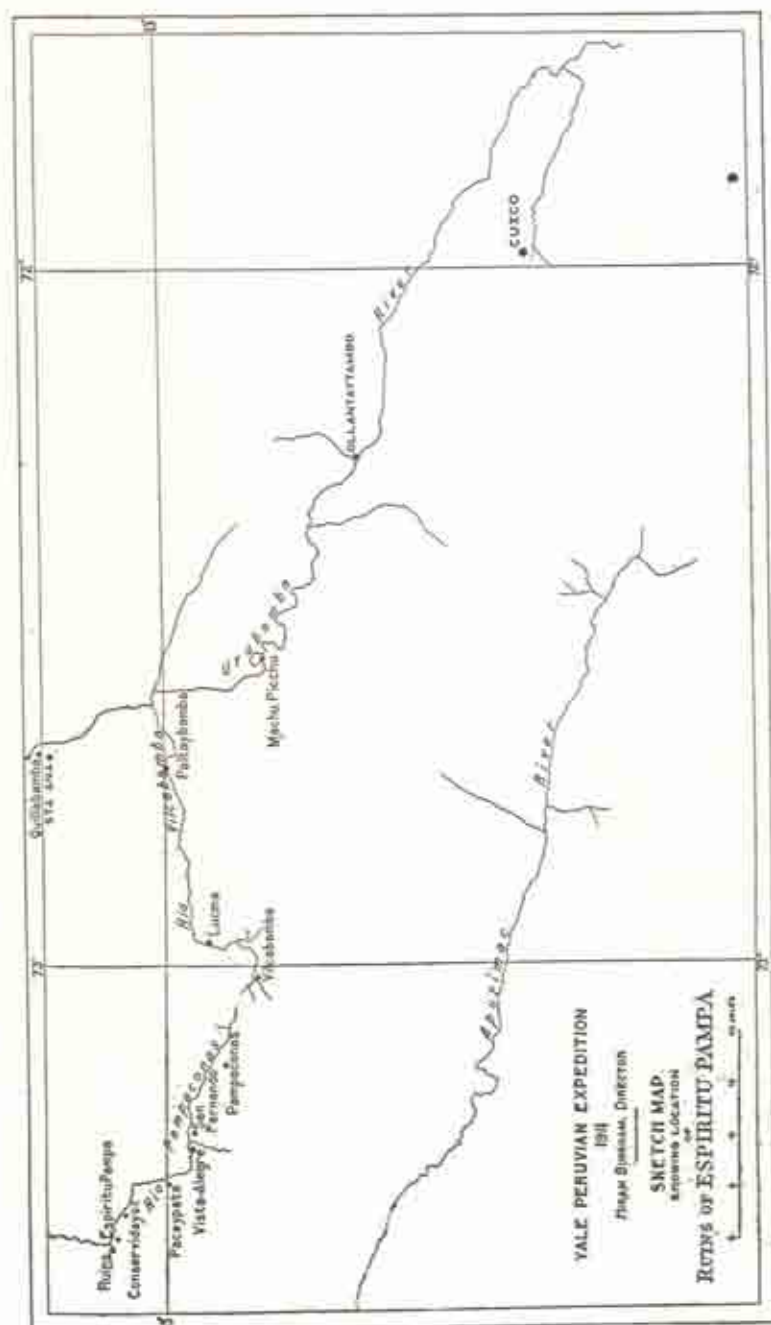


FIGURE 54.

About 200 yards away was the most important group of the Espiritu Pampa ruins. These were all, with one exception, rectangular. All except one or two had gable ends (fig. 59). One of the buildings stood apart and was rounded at one end, having a

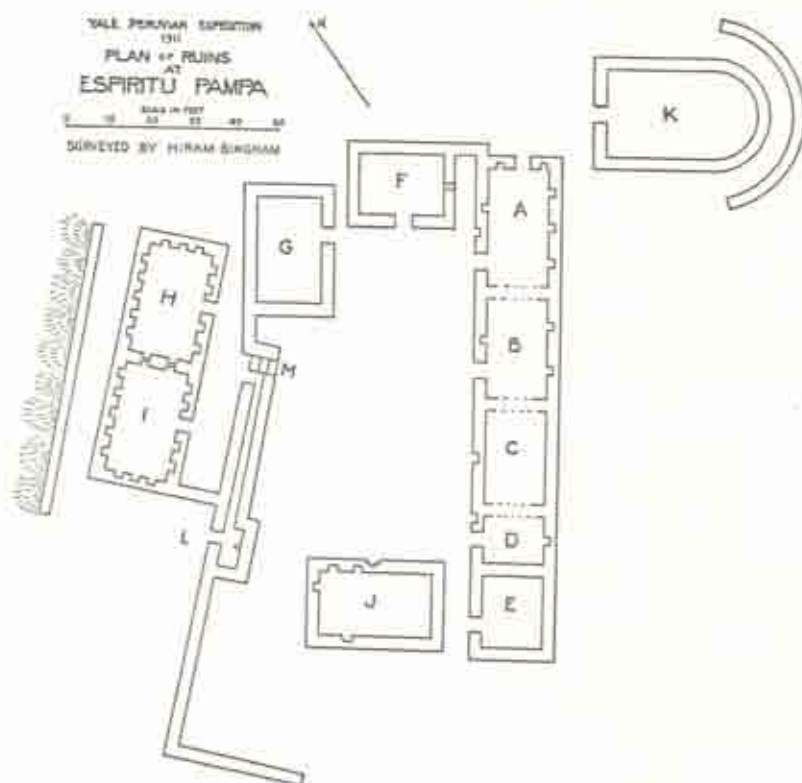


FIGURE 52.

single door at the other end. Another, standing by itself, appeared to have no door at all. Its four niches are arranged with extreme irregularity, and are more than two feet deep, an unusual dimension. It had also a recessed niche outside, facing the little plaza around which the buildings were grouped.

Most of these buildings resemble those at Choquequirau in being built of rough blocks of stone, not squared or otherwise fashioned, except occasionally on the corners and in the doorways.



FIG. 53.—Pierced grave stone and Inca stone utensils found by Saavedra, and Inca pottery now in use at the sugar plantation of Conservidayoc in the Pampaconas valley. (Photo. by Hiram Bingham.)



FIG. 54.—Three large characteristic Inca jars found at Conservidayoc in the Pampaconas valley. (Photo. by Hiram Bingham.)

The stones were laid in mud. The lintels of the doors were not monolithic, but were made of three or four long narrow stone blocks.

The two most important buildings of this group were carefully constructed, and were well provided with niches symmetrically arranged. The niches in these houses are all small, being about a



FIG. 55.—Group of Campa Indians at Espiritu Pampa, Pampaconas valley.
(Photo. by H. L. Tucker.)

foot deep and nearly a foot and a half in height. The gable ends of these houses were ornamented by roughly cylindrical blocks protruding at the point where the wooden rafters had once been. These two houses were situated on an artificial terrace, but their entrances faced the hillside, and they had no windows, unless possibly the small openings high up on the side walls be considered as ventilating windows (pl. XIII, 2).

The drawing (fig. 52) gives a good idea of the general arrangement of this group, and of the relative sizes of the houses.

The inside dimensions of the principal buildings as shown on the plan of the ruins at Espiritu Pampa are as follows:

Room	A.	Length 28 ft.; width 14.6 ft.; thickness of walls 3.2 ft.
"	B.	" 23.5 " " 14.6 "
"	C.	(Walls in too ruinous condition to make inside measurements practicable.)

Room	D.	(Walls in too ruinous condition to make inside measurements practicable.)			
"	E.	Length 17 ft.; width 14.6 ft.			
"	F.	"	20 "	"	14.3 "
"	G.	"	25.5 "	"	15.5 "
"	H.	"	25.8 "	"	15.5 " ; thickness of walls 2.5 ft.
"	I.	"	26.1 "	"	15.7 "
"	J.	"	29.5 "	"	15.3 "
"	K.	"	35 "	"	20.8 "
Fountain	L.	"	9.3 "	"	4.7 " ; length of spout 1. ft. width " " .5 "



FIG. 56.—Campas with painted faces living at Espiritu Pampa in the Pampaconas valley. The one-eyed man on the left is the chief of the small group living there.
(Photo. by H. L. Tucker.)

The present Indians call this group of houses Tendi Pampa.

Rooms H and I are on a lower terrace. M is the stairway leading from the upper to the lower terrace. Nearly all the houses have potsherds and some have charcoal remains.



FIG. 57.—A Campa Indian in Conservidayoc. He is said to be one of the leading men of the tribe, and to have three wives. (Photo. by H. W. Foote.)

In rooms H and I the corners are laid up with more care than the other buildings. There are far more niches, and evidently these were the houses of the chief people of the place. As the doors face the terrace, there is no outlook, and the houses had no windows.

except little ventilators, as shown in plate XIII, 2. In these two rooms we found fragments of better pottery than in the other buildings. This may have been due to the fact that H and I appeared to be unknown to the Indians, as they had been covered with very dense



FIG. 58.—Two of the wives of the chief of the group of Campa Indians at Espiritu Pampa, and three of his children. (Photo. by H. L. Tucker.)

vines and heavy jungle. The niches in these two rooms were about 1 foot in depth, 1.5 in height, and 1.2 in width. These were roughly the measurements of all the niches in the group, except those in E.

The walls of room K were in a very ruinous condition, and it was

impossible to be sure whether this building was constructed at the same time as the others or not. There is no reason why it should not have been a primitive chapel, built by the missionaries near the old Inca settlement. The fact that the walls have not stood as well as those of the other structures might be taken to indicate a



FIG. 39.—Gable end of a house at Espiritu Pampa.
(Photo. by Hiram Bingham.)

later and more hasty construction. The semicircular end of the building is not characteristic of Inca architecture. At the same time, the primitive circular and oval houses near the modern Indian

huts might lead one to conclude that this was an earlier ruin than the characteristic Inca houses near by.

A small fountain (fig. 61) near the doorless house gave an opportunity for water-jars to be filled without going any great distance.



FIG. 60.—General view of typical jungle at Espiritu Pampa, showing in foreground the east end of building H, with projecting cylindrical stone.
(Photo. by Hiram Bingham.)

In and around the houses were remains of water-jars, numerous potsherds, and pieces of several fine Inca aryballi. Two or three small bronze axes had been picked up in this vicinity by the Indians, and Señor Saavedra, a Peruvian who had a very primitive sugar plantation not many miles away, was using three or four large Inca jars which he had found in the woods near the ruins (fig. 54).

Near the plantation Saavedra reported discovering several bottle-shaped graves covered with flat stones. One of these flat stones was pierced, as shown in the illustration (fig. 53), and this



FIG. 61.—Single fountain near building II at Espiritu Pampa.
(Photo. by Hiram Bingham.)

hole was covered with a thin piece of beaten silver. In the graves he said he had found nothing except some very yellow clay. Besides the bronze axes and the characteristic sherds, he had also found several stone mortars and pestles.

With one exception, everything about the fragments of pottery and the architecture of the houses was unquestionably Inca. This exception was the presence of a dozen or fifteen roughly made

Spanish roofing tiles of varying sizes. On account of the small number of them and of the great irregularity of their sizes (one of them was 1.6 feet in width, another 1.9 in width; one was 1.6 feet in length, another 1.9 feet), it seemed to me possible that these tiles had been made experimentally by recent Peruvians or possibly



FIG. 62.—Stone bridge at the ruins of Espiritu Pampa. (Photo. by H. W. Foote.)

early Spanish missionaries, who might have come to this place three centuries ago. The Indians could offer no explanation of the mystery. Apparently none of the houses ever had tiled roofs, as the number of fragments was not enough to cover more than a few square feet, and nearly all were outside the buildings.

I believe that the ruins of Espiritu Pampa were constructed by the Incas, possibly soon after the Spanish occupancy of Cuzco, when, under the young Inca Manco and his sons, they occupied this region. Arable land was extremely scarce, and here on this alluvial



FIG. 63.—West end of building F, showing projecting cylindrical stones and two roofing tiles, a number of which were found lying near these ruins.

(Photo. by Hiram Bingham.)

fan, the largest within a radius of many miles, they were able to raise coca, peanuts, corn, yucca, and other semitropical products.

In the *Relación* of Diego Rodríguez de Figueroa of his visit to the Inca Titu Cusi Yupanqui (published and edited by Dr Richard Pietschmann), there is an account of his meeting the Inca in the village of Pampaconas. The Inca evidently came from

somewhere down in the *montaña*—it may have been from Espiritu Pampa.

Rodriguez relates how he received a present at Pampaconas from the Inca Titu Cusi of a macaw and two hampers of peanuts.

It was interesting to find that the Indians at Espiritu Pampa had eight tame macaws which they were planning to send to market, and that Saavedra had quantities of fine peanuts.

There appears to be no reason why the ruins of Espiritu Pampa are not those of the residence of the Inca Titu Cusi Yupanqui in 1565.

So far as I am aware, no other Inca ruins have been found so low down in the Amazon jungles. The elevation here is about 3,300 feet above sea-level. The location is lat. $12^{\circ} 55'$ S., long. $73^{\circ} 24'$ W., as determined by Mr Kai Hendriksen, the topographer of the expedition.

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PREHISTORIC OBJECTS FROM A SHELL-HEAP AT ERIN BAY, TRINIDAD

By J. WALTER FEWKES

INTRODUCTION

IN the winter of 1912-13 the author visited the Lesser Antilles with a view of gathering data for a contemplated memoir on the aborigines of those islands.¹ He visited the more important private collections of prehistoric objects, as well as those in public libraries and museums on the islands. Incidentally he carried on excavations, of a limited nature, at Banana bay, Balliceaux, where the Black Caribs of St Vincent had a settlement before they were deported to Ruatan on the coast of Honduras. Excavations believed to be important were made in a shell-heap in Trinidad, one of the largest and culturally most important of the Lesser Antilles. The present paper considers the more instructive results of the work last mentioned.

Trinidad is well adapted for the home of an aboriginal people. It has constant fresh water, an abundant supply of food, its mountains and plains being well stocked with animals, the sea affording an abundance of fish, mollusks, and crabs, and its soil yielding a large variety of edible roots and fruits. The island lies in full view of the coast of South America and was visible to the natives inhabiting the Orinoco delta. On its lee side the water is shallow, but landing can be made at many places in small craft. There are high hills in the interior, level savannahs along the coasts as well as inland, and streams of fresh water that open into brackish lagoons.

Early historical references to the Indians inhabiting Trinidad date from the discovery of the island by the great Genoese. As

¹ This visit was made under the joint auspices of the Bureau of American Ethnology and the Heye Museum. The specimens collected are in the latter institution.

Columbus on his third voyage, in 1498, sailed with his companions along the shore of the newly discovered island which he had named after the Holy Trinity, writes Peter Martyr, "From their ships they could see that the country was inhabited and well cultivated; for they saw well-ordered gardens and shady orchards, while the sweet odours, exhaled by plants and trees bathed in the morning dew, reached their nostrils." Following the shore somewhat farther, Columbus "found a port sufficiently large to shelter his ships, though no river flowed into it." There was no sign of any habitation in the neighborhood of this harbor, but there were many tracks of animals similar to goats, and in fact the body of one of these animals was found. On the morrow "a canoe was seen in the distance carrying eighty men, all of whom were young, good looking, and lofty of stature. Besides their bows and arrows, they were armed with shields, which is not the custom among the other islanders.¹ They wore their hair long, parted in the middle and plastered down quite in the Spanish fashion. Save for their loin-cloths of various colored cotton, they were entirely naked." Columbus naïvely declared that he followed in this voyage the parallel of Ethiopia, but recognized that the people he found in Trinidad were not Ethiopians, for the "Ethiopians are black and have curly, woolly hair, while these natives are on the contrary white [lighter in color?] and have long, straight blond hair."²

According to Las Casas, who is said to have possessed accounts of the third voyage of the great Admiral which are now lost, the sailors of Columbus saw human foot-prints on the shore of Trinidad and discovered implements showing that the aborigines were fisherman. As Columbus skirted this coast he observed houses and cultivated fields "*bien probada a labrada*," indicating that

¹ The Orinoco Indians had elaborate shields.—J. W. F.

² It is not improbable that in ancient times there was frequent communication between the inhabitants of the mainland of South America and Trinidad, a communication that was kept up until quite recently, for it was only a few years ago that canoe-loads of Indians were accustomed to land at Erin bay, at rare intervals, and make their way by an old Indian trail to the present city of San Fernando, via Siparia, through the original forests. These visits are now made primarily for trade and are probably a survival of a custom quite common in prehistoric times. Well-marked "Indian trails" can still be followed through the forest depths.

agriculture as well as fishing was practised by the natives. In the meager reference to the people given by Las Casas, he says incidentally that "they were lighter and better proportioned than those of the other Antilles, and wore their hair long like the women of Castile. They wore variegated cloth head-bands, and girdles on the loins. The men were armed with bows and arrows, and, unlike the inhabitants of the other Antilles, had [war] shields."¹ The identity of these people is not clear from this early account, but somewhat later they were referred to as Arawak.

Sir Robert Dudley, in 1595, made a journey through Trinidad and lodged in "Indian towns," finding the natives a fine-shaped and gentle² (*sic*) people, naked and painted red.

Later, Sir Walter Raleigh enumerated the following "nations" or races in Trinidad: Yaïos, Amecos (Arawak), Salvagay (Salivas), Nepoios, and Carinepagotos. At the end of the seventeenth century there were said to have been fifteen Indian towns in Trinidad, but the 2,032 aborigines recorded as inhabiting the island in 1783 had dwindled to 1,082 ten years later.³

In some of the early historical references to Trinidad, all the natives are classed as Arawak.⁴ Thus Davies⁵ writes: "It was when the Captain was engaged for the war against the Arawages who inhabit Trinity [Trinidad] Island, and to that purpose he made extraordinary preparations." In other references to the Trinidad aborigines which might be quoted, the name Carib does not occur, and indeed there is no good evidence that there were Carib on the island, notwithstanding several of the above-mentioned tribes are supposed by some authors to be divisions of "Caribs."

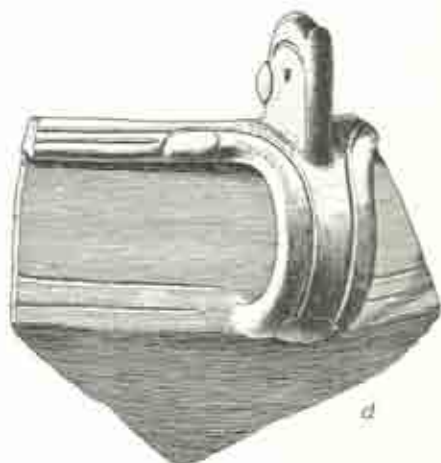
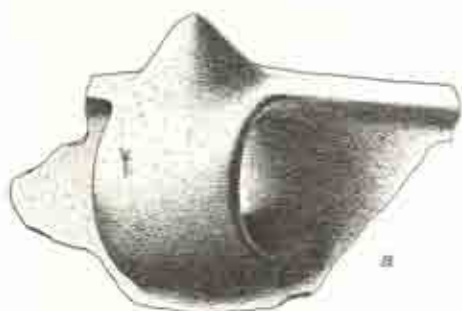
¹ The Warrau, who lived on the mainland, have a large square shield called *ha-ha*, used in athletic sports. (See E. F. im Thurn, *Among the Indians of Guiana*, London, 1883, p. 327.)

² This is not characteristic of the Carib, according to ideas current then or in later times. It may be noticed, *en passant*, that there is no mention of Carib in the early accounts of the Indians in Trinidad seen by Columbus.

³ On Bryan Edwards' map of the West Indies an "Indian town" appears on the east coast of Trinidad.

⁴ The historical evidences all agree that the people of this island were an agricultural race allied in culture to Arawak.

⁵ *History of the Caribby Islands*, 1661.



POTTERY OBJECTS FROM TRINIDAD

- a. Bowl handle with conical projection. b. Bowl handle with head. c, d. Bodies of vessel with animal heads.
e, f. Handles with animal heads.

The nearest approach to pure-blood aborigines of Trinidad live at Arima, in the middle of the island; but aboriginal features can still be found elsewhere among the inhabitants, although the author was unable to learn of a person who could speak any aboriginal language once spoken on the island, or that there were any Indians of pure blood remaining. There survive in Trinidad numerous Indian place-names, as Arima and Naparima; but while some of these suggest names existing in Porto Rico and St Vincent, they are as a rule dissimilar, indicating different languages. The prehistoric inhabitants of Trinidad were probably linguistically distinct from those of the other islands.

Additional knowledge of the culture of the aborigines of Trinidad can be acquired either by archeological research or through survivals in folklore, which are very common.

ERIN BAY, TRINIDAD

The small settlement at Erin bay consists of a few shops, two churches, and a number of dwellings along a well-built road that passes through the town to a warehouse on the shore. Small steamers anchor at intervals a few miles from the coast, but the best way to reach the settlement is by steamer from San Fernando to Cap de Ville and by carriage from the landing. It can also be visited from San Fernando by road, via Siparia. The only accommodations for remaining over night at Erin are at the Government House.

The present population consists almost wholly of blacks and East Indian coolies indentured to English planters or overseers, who own or manage the larger estates. The vernacular is a French patois of peculiar construction and incomprehensible to any but the inhabitants. The plantations are large and considerably scattered; they produce profitable crops, mainly cocoa and tropical fruits that are shipped to Port of Spain for export.

Not far from Erin there are remnants of the primeval forests in which game, monkeys, and tropical vegetation abound. The land is rich and productive, and the estates are prosperous. There are a few small kitchen-middens on the coast, not far from Erin, some

of which will well repay excavation, but their isolation is a practical difficulty unless complete and systematic work be done.¹

There are several shell-mounds on the eastern coast of Trinidad which show fragments of pottery and other rejecta, and several heaps on the southern shore that are superficially composed of shells. In the so-called shell-heaps at San José, the shells are few and inconspicuous, but in a midden at Point Mayaro, which covers a fairly large area, many characteristic potsherds may still be found on the surface. As a rule these shell-heaps are not far from the shore, but in several instances they lie inland.²

Fragments of pottery from this region sent to the author by Mr Dearle of Port of Spain differ from those of Erin bay, but apparently were made by people in the same stage of culture. There is a small collection from this region in the Heye Museum, obtained after this report was completed, which contains a number of highly instructive heads and other fragments. This pottery is colored white and purple-red, whereas that from the shell-heap at Erin bay is painted bright red, although the color is often worn, showing gray beneath.

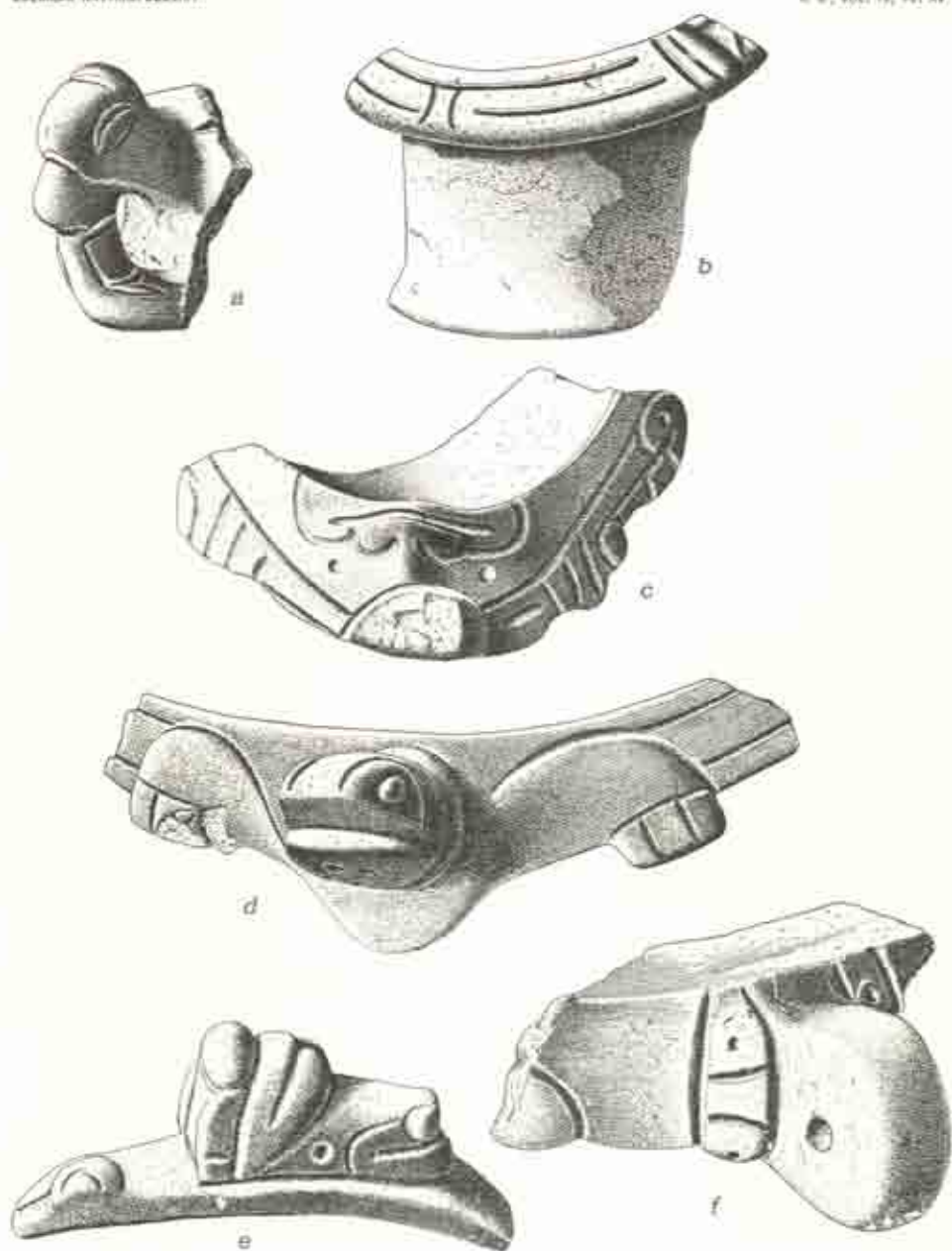
TCIP-TCIP SHELL-HEAP

The largest shell-heap in Trinidad, locally known as Tcip-tpip hill, situated at Erin, a short distance from the shore, covers several acres and forms a considerable elevation. Upon this mound are constructed the government buildings, the police station, and the warden's office. The author obtained from the assistant warden, Mr John Menzies,³ permission to make excavations in that part of the shell-heap situated on Crown land, but was obliged to suspend

¹ Trinidad has never been regarded as a remunerative field for archeological investigation. The first results of the author's efforts in the island were not very promising, but after some discouragement, excavations of a shell-heap at Erin bay, in the Cedros district, yielded important data bearing on the former culture of the aborigines in this part of the island.

² Efforts to find evidences that man inhabited the numerous caves in Trinidad, or used them for burial purposes, have not been rewarded with success, although many caves, especially those near Pedro Martin's basin, were examined.

³ The author is very grateful to Mr Menzies for his aid, and takes this opportunity to thank him for his many kindnesses while at Erin bay. He is likewise indebted to Mr Dearle, of Port of Spain, for voluntary aid in the excavations.



POTTERY OBJECTS FROM TRINIDAD

- a. Handle with modified head. b. Section of rim of vessel. c. Rim of effigy head. d. Rim with head and flippers.
 e. Rim with head. f. Flattened disk with circular handle.

work on the private land adjoining, as it could not be thoroughly explored without injury to the property. The specimens, although limited in quantity, are the most numerous known, and give a fair idea of the nature of the contents of a typical Trinidad shell-heap.

Tcip-tcip hill was first described by Mr Collens, whose excavations therein were rewarded with several fine specimens, now on exhibition in the Victoria Institute at Port of Spain. These objects are figured by Collens in his *Handbook of Trinidad*, and are also illustrated by the present author in his *Aborigines of Porto Rico*.¹

Some limited excavations were also made at Tcip-tcip hill by the Reverend Thomas Huckerby, of San Fernando, several years after Collens finished his work, but only a few fragments of pottery, now in the Heye Museum, were obtained.

The extent of the Tcip-tcip mound could not be determined, as it extends far into the cocoa plantation under a dense tropical growth. Its surface, except where cleared by the Government for the erection of buildings, was covered with vegetation. Some distance from the hill, where a ceiba tree had fallen, the roots showed a considerable deposit of shells, indicating that the extent of the heap was great and furnishing a clue for continued excavations.

The shells in the mound at Erin are in layers alternating with vegetable mold, ashes, and soil, forming a sticky mass² that clings tenaciously to the specimens and almost conceals their identity. The terra-cotta heads, when dug out of the earth, were completely coated with mud which had to be removed by washing, and by so doing some of the red pigment which covered them disappeared. As the ceramic objects had been painted after they were fired, the color is not permanent, and the length of time they had been in the ground caused it to come off even more readily.

As mentioned, a vertical section of the mound exposed alternating layers of shells and ashes, mingled in some cases with humus and with frequent fragments of charred wood. Sometimes the strata were composed entirely of shells, but their thickness was not uniform, especially at the periphery of the mound. Over the entire

¹ *Twenty-fifth Annual Report, Bureau of American Ethnology*, pl. lxxxv.

² During the author's work in Trinidad it rained almost every day.

surface of the mound there was a dense growth of tropical vegetation, with clearings at intervals for cocoa and plantains. The fallen trunks of palms, live shrubs, and trees formed an almost impenetrable jungle extending into the neighboring forests where the ground had not been cleared. On the sea-side the mound is only a short distance from the shore and is separated from the bay by a lagoon inclosed by a narrow strip of land. Near by is a spring from which the shipmates of Columbus obtained drinking water in 1498.

In their general character the objects found in the Tcip-tcip mound are not unlike those occurring in other West Indian middens, although they differ in special features. As is usually the case, the majority of the specimens are fragments of pottery, which are among the most instructive objects by which culture areas can be defined. These will be considered first.

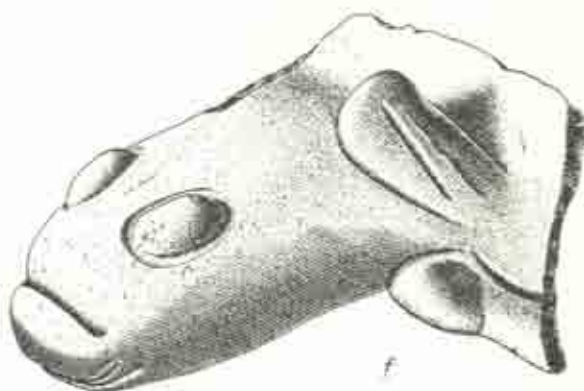
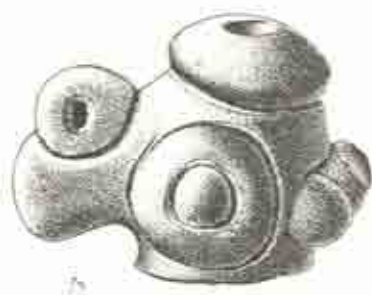
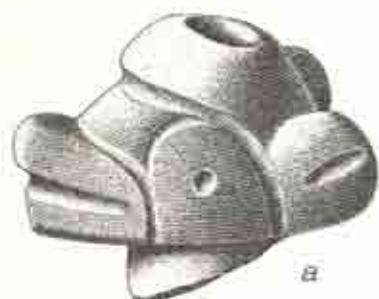
POTTERY

Comparatively little has been published on the pottery of the Lesser Antilles, although specimens of whole jars and innumerable fragments are found in various museums and private collections. The Heye Museum is the richest in the world in these objects. The potter's art was practised by aboriginal people from Trinidad to Cuba and the Bahamas, but while there is general similarity in the product, there are very marked specific differences.

The several beautiful specimens of pottery in the Victoria Institute at Port of Spain, Trinidad, two of which, through the kindness of the officers of that institution, were photographed, have been reproduced by the author,¹ who has quoted the description in the appendix in Collens's *Guide to Trinidad*, here reprinted as it contains practically all that has been published on the archeology of Trinidad.

"The discovery of some interesting Indian relics at Erin during the past month [May, 1888] is, although I had brought my work to an end, of sufficient importance to demand a brief notice. On the occasion of a recent visit of His Excellency, Mr. W. Robinson and suite to the southern quarter of the island, the Hon. H. Fowler, who was one of the party, observed a mound of shells. Dis-

¹ Aborigines of Porto Rico, *Twenty-fifth Annual Report, Bureau of American Ethnology*, pl. lxxxv.



POTTERY OBJECTS FROM TRINIDAD

a, b, c. Bottle heads. d. Head. e. Conventionalized head. f. Elongated head.

mounting, a closer inspection revealed some pieces of rude pottery, and subsequent excavations by Mr. A. Newsam, the Warden, led to the unearthing of some capital specimens, indicating beyond a doubt this had been the centre, at some period more or less remote, of an Indian settlement. The pottery is of two kinds, glazed¹ and unglazed, the latter dating back to a time anterior to the discovery of the New World, for the art of glazing was unknown to the early Indians, nor is it likely that they became acquainted with it after the Spanish occupation."

The following specimens are figured by Collens:

FIG. 1. A hollow stone, smooth in the concave part, forming a rude mortar.

The Indians used a hard, smooth pestle for pounding their seeds and grains.

FIGS. 2, 3, 4. Heads of animals in burnt clay, more or less grotesquely shaped.

The eyes and mouth are exaggerated, a few, broad, bold lines serving to bring out the most striking features. In fig. 4 the head of the monkey is fantastically crowned. All these are probably deities or ornamented attachments of earthen vessels.

FIG. 5. A well shaped squirrel. Perhaps a toy whistle.

FIG. 6. An earthen bowl in fine preservation, about the size of an ordinary vegetable dish. With the lid, which is unfortunately missing, there would doubtless be a good representation of a turtle; as it is the head and tail are clearly, and the limbs somewhat clumsily shown."

The best entire vessel found by the author in his excavations at the Erin bay midden is the shapely brown vase shown in figure 64.

This receptacle was buried two and half feet beneath the surface, in a thick layer composed wholly of shells. Its association and situation show no indication that it was deposited with care, and it could not have been a mortuary vessel, as no bones were found near by: it appeared rather to have been abandoned or dropped by its



FIG. 64.—Bowl with ring at base and incised decoration.

owner where it was found. The shape of this vase is an uncommon one in prehistoric West Indian pottery. In form it is

¹The author regrets that he cannot support Mr Collens's statement that glazed pottery occurs in the Teip-teip mound.—J. W. F.

enlarged equatorially, and tapers above to a recurved lip, which, as is rarely the case in West Indian earthenware, is without handles or lugs, and below, in which region the exterior is slightly convex, to the base. Decoration in the form of incised lines appears on the surface of the upper area, but the under portion is smooth and without ornamentation. This decoration consists mainly of parallel grooves alternating with crescents, and circles with central dots. The walls of the vessel are thinner than is usual in West Indian pottery, and the surface is little worn. An exceptional feature of this receptacle is the base, which consists of a circular stand, thus rendering stability to the vessel. Similar bases of other specimens, being much more substantial than the bodies, are frequently preserved entire while the remainder has disappeared. This form of base is of common occurrence in fragments also from St Vincent and Grenada, but is rare in Porto Rico.

Several bowls had been so long in the moist soil of which the Tcip-tcip mound is composed that they crumbled into fragments when an effort was made to lift them from their matrix. Although

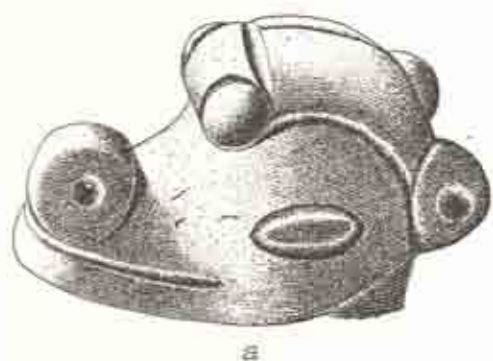


FIG. 65.—Bowl with flat base.

the forms of these bowls vary somewhat, several resemble that shown in figure 65, which may have been used for condiments or for pigment.¹ The walls of this vessel are thick, with smooth undecorated surface; its bottom is flat. The rim shows two opposite imperfections that may indicate the position of heads which served as handles.²

¹ Many fragments of red and green pigment were found in the mound. The majority of the vessels here described are of gray or bright red ware.

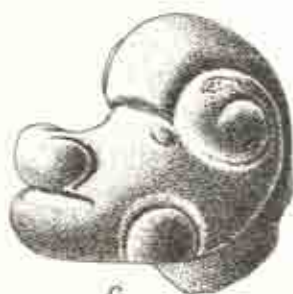
² After pottery objects were taken from the mound they hardened considerably, but the handles of this vessel may have been broken from the rim previous to its recovery.



a



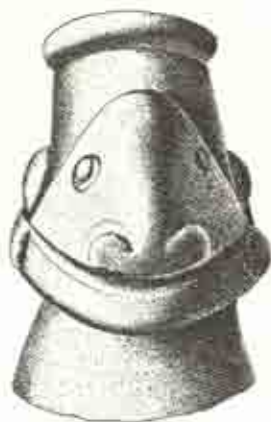
b



c



d



e



f

POTTERY OBJECTS FROM TRINIDAD

a, b, c, f. Heads. d. Head with broken rim. e. Head of bottle.

Figure 66 represents a small rude pottery rest, of spool-shape, with flat base, very thick walls, smooth undecorated surface, and somewhat flaring rim. Its size suggests that it was once used as a toy or as a ceremonial vessel, but it was more likely designed as a support for a bowl. Some beautiful pottery rests from St Vincent are in the Heye collection, several of which, in a fragmentary condition, were obtained by the author at Balliceaux. The most elaborate of these measures about six inches in height, is perforated on the sides, and has a face in high relief. This object will be fully described in a subsequent report.



FIG. 66.—Pottery rest.

The rectangular clay box shown in figure 67 has thick walls, a flat bottom, and squatty legs continuous with the sides. Its longer sides bear incised S figures surrounded on three sides by a straight furrow. The narrow sides of the vessel are ornamented with incised crescents also partly framed with straight lines. From



FIG. 67.—Rectangular vessel.

the broken places at the two opposite shorter sides of the rim it would seem that the vessel had been provided with handles, probably in the form of heads, but it is also possible that a head may have been attached to one side and a tail opposite, thus producing

an effigy vessel. Rectangular receptacles of this kind are rare in collections of West Indian pottery, a fact which imparts special interest to this example.

The object shown in figure 68 is a fragment of a bowl, shaped like a turtle, with head and tail, and the left legs drawn up to the

remaining side of the body. This interesting specimen is almost identical with the unbroken turtle effigy vase figured by Collens, to which reference has already been made. Although nearly half

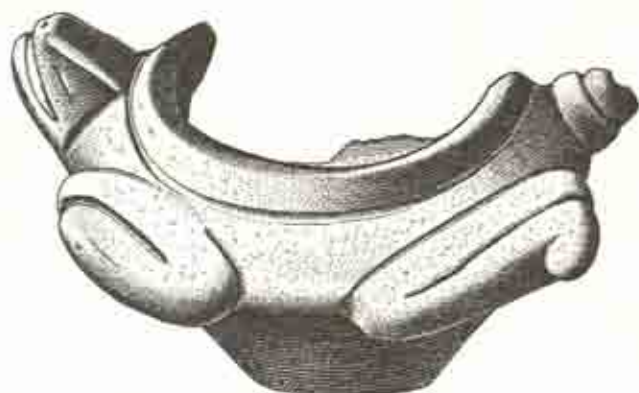


FIG. 68.—Fragment of a turtle effigy bowl.

of this specimen is absent, enough remains to enable a determination of its form and of the general character of the relief decoration, which was no doubt identical on the two sides.¹ The head, which is not attached directly to the rim of the vessel but to the upper side, is rather long, with blunt snout, and mouth extending backward;



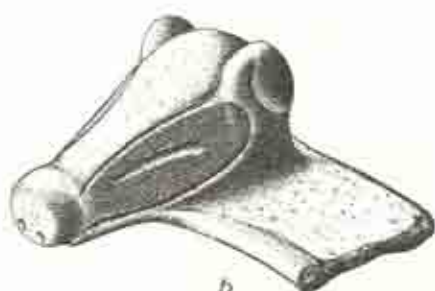
FIG. 69.—Effigy bowl possibly representing a turtle.

the nostrils are indicated by pits, the eyes by slits. The tail consists of two buttons separated by grooves, and the fore and hind

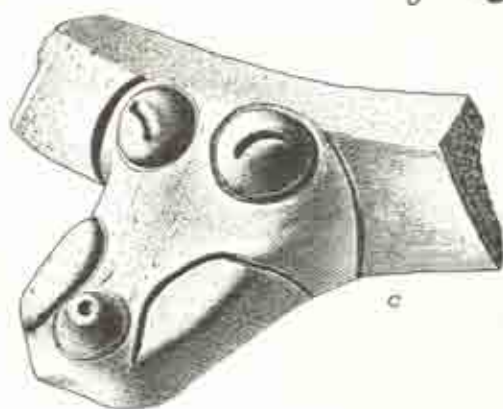
¹ Unlike the clay turtle figured by Collens, this specimen has no raised rim about the base. We know from historical sources that the turtle played an important part in Antillean mythology, which accounts for its frequent appearance on ceramic and other objects.



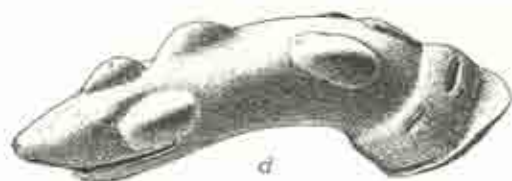
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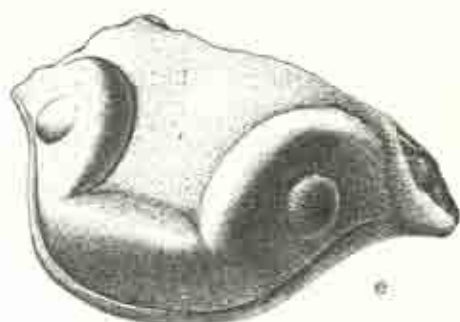
b



c



d



e

POTTERY OBJECTS FROM TRINIDAD

a, b. Heads. c. Head on section of rim. d. Head and body of shark. e. Flattened head.

legs, with no indication of flippers, are modeled close to the body. Like many Antillean earthenware vessels, the walls are thick and the rim not decorated.

The vessel shown in figure 69 is also supposed to be a turtle effigy, an almost featureless head being attached to the rim. Opposite the head the rim is broken, indicating where there may have been formerly an appendage representing the tail. This object fortunately is one of the few whole specimens in the collection.

In sharp contrast with the thick-walled, coarse bowl last mentioned, is a fragmentary vessel (fig. 70) which may be regarded as one of the finest and most elaborately decorated specimens found at Erin bay. This beautiful example represents the highest type of incised decoration of which the Antillean potter was capable. It shows the base and practically a quadrant of the lateral decoration of the bowl, which was probably repeated on the missing side.



FIG. 70.—Decoration on food bowl.

In addition to the specimens of entire pottery above described, many fragments, some of which represent characteristic forms, were excavated from the Erin shell-heap. The best of these are sections of rims and handles, which, being less fragile, are more readily preserved. Their chief features will now be considered.

HANDLES OF VESSELS

Considerable variation occurs in the form of the handles of earthenware vessels, several of which are still associated with portions of the side or rim, while others show how the handle was

attached at both extremities. Some of the handles are mere knobs or bosses, other examples are in the form of elaborate heads, the various modifications of which recall the pottery heads of Porto Rico and Santo Domingo.

The handles of bowls shown in the accompanying illustrations (pl. XIV-XIX) are broken from their attachments; sometimes they are very simple in form, but more commonly they represent heads which vary more or less in shape. The specimen (pl. XIV, *a*) which has a fragment of the bowl attached is one of the simplest forms, loop-shaped with a conical projection near the rim. The handle is broad, with ample space for the fingers. In some specimens the handles are even simpler, as they are without the conical elevation, while the upper end, instead of being attached to the rim, rises from the side of the bowl. In other examples the handle takes the form of a lug or knob.

In plate XIV, *b*, instead of a conical knob, the handle consists of a simple head in which the eyes, nose, and mouth are crudely indicated, as in other West Indian vessels.

Plate XIV, *c*, shows a specimen in which the head surmounting the handle is modeled in greater detail, and a sufficient part of the body of the bowl remains to show the incised ornamentation of the exterior surface as well as of the handle. Incised lines unite at the throat and continue down the middle of the handle throughout its length.

The figure of the handle illustrated in plate XIV, *d*, is similar to that of plate XIV, *c*, but the two incised lines ornamenting it continue along the rim of the bowl and end above an oval elevation evidently representing the body of the animal. The slender head of the animal projects upward; the eyes are small, and incised crook-shaped lines extend along the head and partly surround the eyes. The equatorial girth of this vessel is somewhat larger than the circumference of the rim and is decorated with two incised parallel lines.

Another variation in form of effigy handle is shown in plate XIV, *e*, the head represented in this case having a somewhat pointed snout, oval eyes surrounded by circular grooves, an open mouth,

and projections separated by grooves on the head. This is more massive than the handles before described; it is not incised, and its breadth at the middle is somewhat less than at the point of attachment to the body of the vessel.

One of the most elaborate heads ornamenting a handle partly free from the body of the vessel is shown in plate *xiv, f*. This handle, like the preceding, is thick and broad. When placed with the rim of the vessel uppermost, the two grooves may be identified as lips, the crescents above them as nostrils, and the ring on the side as an eye. If, however, the figure is turned in such manner that the rim is vertical, the eyes and what was identified as the forehead become the snout with nostrils and mouth.

The handle shown in plate *xv, a*, instead of being broad is small and rounded; it is decorated with incised lines, and the effigy portion is larger than the handle proper. The head is protuberant and the eyes lenticular. Although the other features of the head are considerably distorted, it would appear that the handle in this specimen extends from the top of the head instead of from the neck, thereby turning the mouth uppermost, as in the last example.

In the sections of the rims of vessels next to be described no handles are present. Plate *xv, b*, represents a rim ornamented with two incised, horizontal, parallel furrows, alternating with vertical grooves. This rim is broad and flaring, with rounded margins, imparting a convex surface to this portion of the bowl, which has a straight body and a flat base.

The incised ornamentation on the example shown in plate *xv, c*, is more elaborate than the last. In this case the rim is quite broad, somewhat pointed, and covered with furrows, indicating an elaborate figure which unfortunately cannot be wholly determined on account of its incompleteness.

Plate *xv, d*, exhibits a well-modeled rim probably representing a turtle with open mouth and rounded eyes. The pits under the lower jaw are uncommon, but like other features are suggestive of a turtle's head. The two appendages at the side evidently represent flippers.

The well-modeled head indicated in plate *xv, e*, is attached to

a section of the rim, but placed lengthwise instead of vertically as in other specimens. The snout is elongated, while the mouth extends far backward; the eyes are indicated by pits, and a round projection separated by grooves appears on the forehead.

The degree of conventionalization in these specimens is sometimes very great, as in plate xv, *f*, where practically all resemblance to a head is lost. Here we have a disk attached by one margin to the rim of a bowl, which is ornamented with a rude incised design. A handle distantly related to the last is illustrated in plate xvi, *a*.

It often happens that the walls of the orifice of a flask-shaped bottle are modified into a perforated clay head,¹ as in the specimens shown in plate xvi, *a*, *b*, *c*.

Plate xvi, *b*, *c*, *d*, *e*, show varying forms of effigy heads which served as handles of vessels. All of them have well developed nostrils, eyes, and other facial features. The presence of nostrils differentiates these heads from many others and affords a hint, although obscure, as to the identity of the animal designed to be represented. We find similar nostrils in certain three-pointed stone idols from Porto Rico, which we have other good reasons to identify as reptiles, hence the conclusion is fairly logical that these heads were intended to represent similar creatures.

The two projections on top of the head and the form of the eyes and nose of the effigy shown in plate xvi, *f*, are exceptional. The crescentic mouth is suggestive of the same organ in certain undetermined Porto Rican stone idols of three-pointed form.

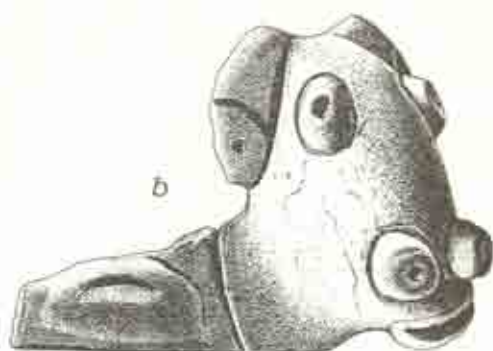
A remarkably well modeled reptilian head is shown in plate xvii, *a*. Its great elongation distinguishes it from the head shown in plate xvii, *b*, which is almost spherical and has the organs represented by incised lines rather than in relief. The same general tendency to rounded forms is exhibited in plate xvii, *c*, *d*, *e*, but in these the nose is notably exaggerated.

The head, and especially the position and form of the nose, of the handle shown in plate xvii, *f*, remind one of pottery from the Grenada region, a specimen of which is figured in the author's

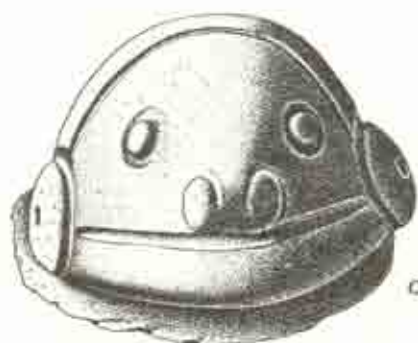
¹ This is the first example of a head from a prehistoric flask-like vessel from Trinidad or the Lesser Antilles, although common in Hayti and Santo Domingo.



a



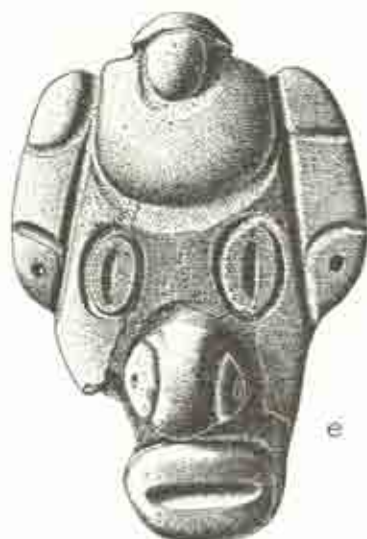
b



c



d



e



f

POTTERY OBJECTS FROM TRINIDAD

a, Round knob of vessel. b-f, Heads.

report on the *Aborigines of Porto Rico*.¹ In this instance eyes, nose, and mouth are indicated by hemispherical protuberances; the nostrils are represented by parallel slits, the eyes by pits in the middle of a circular disk, and the lips by a transverse furrow in a circular boss. A somewhat similar method of indicating these parts is shown in plate XVIII, *a*, while in *b* the form of the head reminds one of a peccary, or wild hog. The mode of attachment to the rim of the vessel is quite apparent in this instance.

The unpaired nostril of the effigy shown in plate XVIII, *c* is indicated by a single pit in the summit of a conical projection; the eyes are prominent and contain crescentic slits. This head, as shown by a fragment of the rim still attached, projected farther beyond the bowl than is usually the case. The flat form of the head suggests an alligator, but it was evidently designed to represent a mythological conception rather than a realistic animal.

If superficial likenesses of conventionalized figures are regarded as reliable for identification, plate XVIII, *d*, might well be considered to represent a shark's head, for the position of the mouth in this specimen is well below the snout, which tapers above uniformly to its end. There is no doubt that the protuberances above the mouth were intended to represent eyes, while those near the rim of the vessel may have been designed for fins or other organs. No representations of nostrils or ears are apparent in plate XVIII, *e*, but the broad flat head has two eyes and a well developed mouth. The break at the point of attachment shows that it was a handle of a vessel.

The heads illustrated in plate XIX, *c*, *d*, *e*, cannot, by reason of their highly conventionalized character, be readily assigned to any of the forms above considered. There remains a considerable number of other pottery heads obtained at the Erin Bay midden, some of which are too greatly mutilated for identification.



FIG. 71.—Pottery stamp.

¹ Op. cit., pl. lxxxiv.

Figure 71 illustrates a clay stamp, one of a class of objects not uncommon in the Lesser Antilles. The face of this specimen is circular, with an incised design, and was probably used either for decorating pottery or in a manner similar to the clay cylinders elsewhere described.¹ These stamps are often elaborate. Some of those lately obtained by Mr de Booy from Santo Domingo bear images on their surfaces and rattle when shaken.

STONE IMPLEMENTS

Stone implements from the Erin Bay midden consist of celts, axes, chisels, pecking-stones, mortars, pestles, and other forms. A number of almond-shaped celts, like Porto Rican petaloids, were collected in Trinidad. The most interesting axe is flat, with notches cut at opposite edges, as shown in figure 72.

There is general similarity in the forms of the mortars found in the West Indies, but the pestles vary in different islands. In the

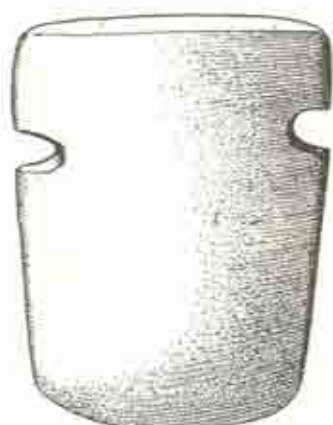


FIG. 72.—Notched axe.



FIG. 73.—Jadeite pendant.

Santo Domingo-Porto Rico area pestles commonly have handles decorated with animal heads or even with entire animals, but in the

¹ *Aborigines of Porto Rico*, pl. lxxxvi, a.

St Kitts region they are simple unornamented cones, pointed at one end, circular or oval at the opposite end, but with no differentiation of base, handle, or head. The Guadeloupe and St Vincent pestles are of the same general character as those from St Kitts, which are identical with those found in Trinidad.

There are several stones in the collection from the Erin shell-heap that were evidently used for pecking other stones or for pounding pigments or bruising roots. They are elongate, sometimes angular, with shallow pits on two or all four faces which served to facilitate handling by providing convenient places for the thumb and forefinger. Circular stone disks, probably used as grinders, were likewise found.

A small finely polished pendant (fig. 73) made of jadeite, perforated at one end, was found buried deeply among the shells in the Erin Bay midden. In finish this beautiful specimen recalls certain finely polished green petaloids collected in Porto Rico and other islands. The stone of which these objects are made does not occur in the West Indies, a fact indicating that the pendant, as well as the celts, was brought from the mainland, probably from South America.

BONE OBJECTS.

Considering their occurrence in soil saturated with moisture, it is remarkable that bone objects were preserved in the Erin Bay mound, but many unworked animal bones and a few bone implements were exposed in the course of the excavations. One of the latter is from an unidentified animal, and its flattened form resembles a spatula used in pottery making. Among other bone implements may be mentioned a tube of uniform diameter, supposed to be an ornament, cut off at both ends and having a slit extending along two-thirds of its length.

OBJECTS OF WOOD

A fine black finger-ring, similar to the rings made and worn by the natives in several islands of the West Indies, was found deep in the shell-heap. It is made from a seed of the gougou palm. An angular fragment of lignite of irregular form, with an artificial groove encircling it, was found in one of the deepest excavations.

COMPARISON OF PREHISTORIC OBJECTS FROM TRINIDAD WITH THOSE
FROM OTHER ISLANDS

As is generally the case in archeological studies, pottery, from its greater durability and variety in form, is one of the most reliable types of artifacts for the study of prehistoric culture areas in the West Indies. The Erin Bay shell-heap shares with the middens of other islands a predominance of earthenware with effigy forms and relief decoration, and the incised ornamentation of pottery vessels from this mound are strictly Antillean. When we compare these specimens with those from Porto Rico, we notice certain specialized features which are distinctive. In geometric designs the incised lines do not end in an enlargement, nor are their extremities accompanied by pits as is almost always true of pottery from Santo Domingo and Porto Rico. Comparatively few elongated heads of reptiles are found on pottery from Porto Rico, but such forms are common from the shell-heap at Erin bay. The heads from Porto Rico are mainly grotesquely human in form. As a rule the rims of the earthenware vessels from Porto Rico have approximately the same thickness as the vessels themselves, whereas in Trinidad they are often enlarged, or turned back, and are commonly ornamented with figures as in the pottery from Grenada and St Vincent.

While it has been necessary to make comparisons mainly from fragments, it is believed that the number of characteristic forms of pottery figures from this and from more northerly islands are sufficient to separate the two and to lead to the belief that the pottery from Trinidad is most closely allied to that of the Grenada area, as would be naturally suspected, and that it is only distantly related to that of the Greater Antilles.¹

While the evidence is not decisive, it appears from the material available that the Trinidad pottery is nearer that of South America than to any of the northern islands of the West Indies. This fact may be explained by the situation of Trinidad, which lies within sight of South America, a fact that led to an interchange of cultures and peoples of the two localities.

¹ The author has many drawings of St Kitts pottery which shows still greater difference in form and ornamentation.

The nearest point in South America where excavations of shell-heaps have been made is the Pomeroon district,¹ British Guiana, whence we have a few specimens of pottery. None of these are so well made as those from the Erin shell-mound, and there are other indications that the ceramic art had reached a higher development in the islands than on the adjacent mainland.

Regarding the Pomeroon shell-heaps, im Thurn reached the following conclusions: (1) "That they were not made by resident inhabitants of the country, but by strangers; (2) that these strangers came from the sea, and not from farther inland, and (3) that these strangers were certain island Caribs, who afterward took tribal form in Guiana as the so-called Caribisi, or, as I have called them, true Caribs."

Attention has been called at the beginning of this paper to the fact that the Trinidad aborigines are not spoken of as Carib, and the archeological objects show no likeness to the work of this people, but rather to that of the Arawak, who were the great potters of the Orinoco.

The well-made pottery of Erin bay suggests an agricultural population rather than the nomadic Carib people, and the form of certain flat clay platters, or griddles, is not unlike those used by the Arawak in the preparation of meal for cassava cakes. The aborigines who made these objects were in a stage of culture similar to that of a people of the West Indies before the coming of the Carib in prehistoric times. Pottery making is more strictly a characteristic of meal-eaters, and as the South American Arawak were well-known potters, we cannot go far afield if we ascribe the pottery from Trinidad to a kindred people. The nearest South American people to whom we would look for their kindred are the Guaranos, or Warrau, some of whom still inhabit the delta of the Orinoco, only a few miles across the Gulf of Paria, an inland sheet of water which separates Trinidad from the continent.

Although im Thurn identifies the builders of the Pomeroon shell-mounds as insular Carib, he gives some weight to the theory

¹ E. F. im Thurn, *Among the Indians of Guiana*, London, 1883. See also Rev. W. H. Brett, *The Indian Tribes of Guiana, Their Customs and Habits*, London, 1868.

that they were Warrau, which theory, however, he does not discuss and apparently does not accept. It seems to the author that the pottery found in the Tcip-tcip mounds indicates a culture higher than that of the Carib, and more advanced as art products than any thus far collected from the Warrau. He regards it as a localized or autochthonous development originally of South American origin, but belonging to the same great prehistoric insular culture found in the Antilles from South America to the Bahamas and Cuba. This culture had been submerged by the Carib in some of the smaller islands, but persisted into the historic epoch in the larger islands which Carib could not conquer.

The conclusion reached from a comparison of the objects from the Erin Bay midden is that while there is a general likeness in pottery from all the islands of the West Indies, there are special ceramic culture areas in different islands. It is also believed that the Carib had no extensive settlement in Trinidad, and that they came to the other islands long after agricultural people had developed on them, or were renegades from some of the islands where the uncertainty of crops drove them to become marauders on others.

BUREAU OF AMERICAN ETHNOLOGY
WASHINGTON, D. C.

A PIEBALD FAMILY OF WHITE AMERICANS

By ALBERT ERNEST JENKS

IN an American university is a member of an old-line American family now living in the Northwest and scattered over at least four states, which for three succeeding generations exhibits an unusual marking of the skin. I have examined and photographed piebald members of each of these three generations. My informant tells me of a piebald cousin of his father whom he well remembers, thus affording knowledge of piebaldism in four succeeding generations.

I shall not take time to describe the exact markings of the skin of the three persons shown in the accompanying illustrations; however, there are some important facts that should be noted. The light areas, or spots, are strikingly bilateral, with considerable symmetry; they occur with marked consistency at the more important joints of the body—as ankles, knees, hips, wrists, elbows, and shoulders. There is also a tendency to a median dorsal light line. This light dorsal area is the opposite of what Castle reports in his family of spotted negroes.¹ He found a dark dorsal area.

FAMILY HISTORY

The American history of this family, so far as is now known to me, is as follows: The family is of Welsh and Scotch origin. Though no part of the family has had its American ancestry traced completely, the first man known in America bearing the common patronymic was living in New England in 1668. Members of this family believe that this New Englander is their original American ancestor.

My chief informant (number 7 in the genealogy chart, fig. 74) tells me that his father (number 1) was born in Ohio in 1813 and moved to southwestern Michigan when a youth. There he married

¹ Q. I. Simpson and W. E. Castle, *A Family of Spotted Negroes*, *American Naturalist*, Jan., 1913, pp. 50-56, illa.

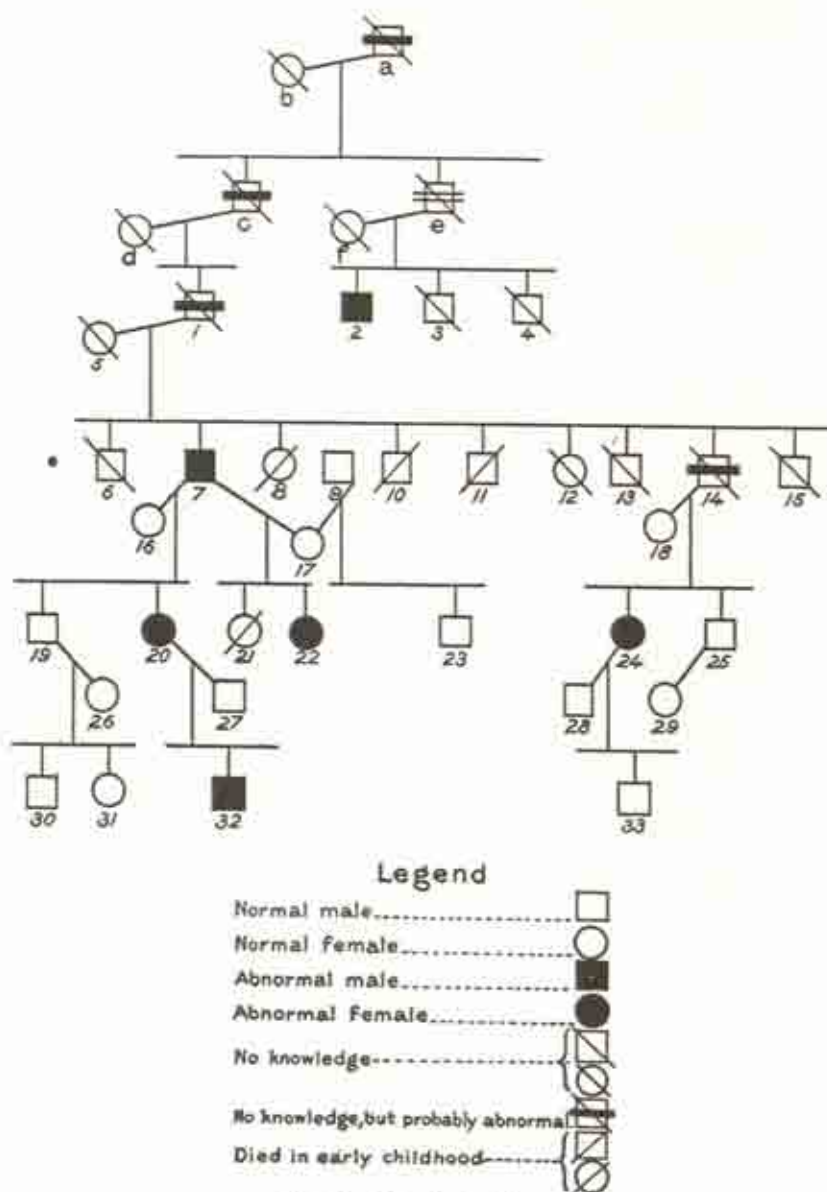


FIG. 74.—Genealogical chart.

a young woman whose family had also migrated from Ohio. Number 1 lived all his life on his farm in Michigan, became the father of two daughters and seven sons, and there at the age of fifty-one years died of lung fever—"what would now be called pneumonia."

The genealogy chart (fig. 74) shows that my chief informant is a piebald male. He well recalls his personal boyhood knowledge of a cousin of his father who was also spotted, and who lived near his father's home in Michigan. This person is number 2 in the genealogy chart. No descendant of number 1 has knowledge of any piebald members of the family other than those shown in the chart. No opportunity has been opened for study of the still existing Michigan branch of the family, though I have personal knowledge of some of its members whom I knew by name during my college days. I can vouch for said persons as above the average in education and moral fiber; one I recall well, even in facial features, who was a college trustee.

INDIVIDUAL HISTORY

A short individual history of the descendants of number 1 follows. First appears a list of persons in the first filial generation, though it is the second successive generation known to bear piebalds.

Number 6 was a male of unknown pigmentation, born in 1838, unmarried, who died of rheumatism at 55 years of age.

Number 7 is a pigmented male, born in 1840. He has married twice, and is the father of two children by each wife. Today he lives in Minnesota; he is my chief informant concerning the history of this family. He is shown in figure 75, and more facts about him will be presented later.

Number 8 was a female of unknown pigmentation, born in 1842, who died of unknown cause at 3 or 4 years of age.

Number 10 was a male of unknown pigmentation, born in 1845, who died of unknown cause at 3 or 4 years of age.

Number 11 was a male of unknown pigmentation, born in 1846 or 1847, who died of unknown cause at 4 or 5 years of age.

Number 12 was a female of unknown pigmentation, born in 1848, married but without children. She died of dropsy at about 25 years of age.

Number 13 was a male of unknown pigmentation, born in 1849, who died at 22 or 23 years of age in an asylum, after having suffered some time with epilepsy.

Number 14 is a male of unknown but probably abnormal pigmentation, born in 1850, and still living in Missouri. He has been afflicted with dropsy, but has completely recovered; now has excellent health and works all the time.

Number 15 was a male of unknown pigmentation, born in 1853; was not very strong and in consequence was given the lighter tasks about the farm, but he was never sick. At the age of about 30 he went to California and was for 8 or 10 years a successful collector there. He disappeared completely in 1892; all efforts of the family to trace him have been futile.

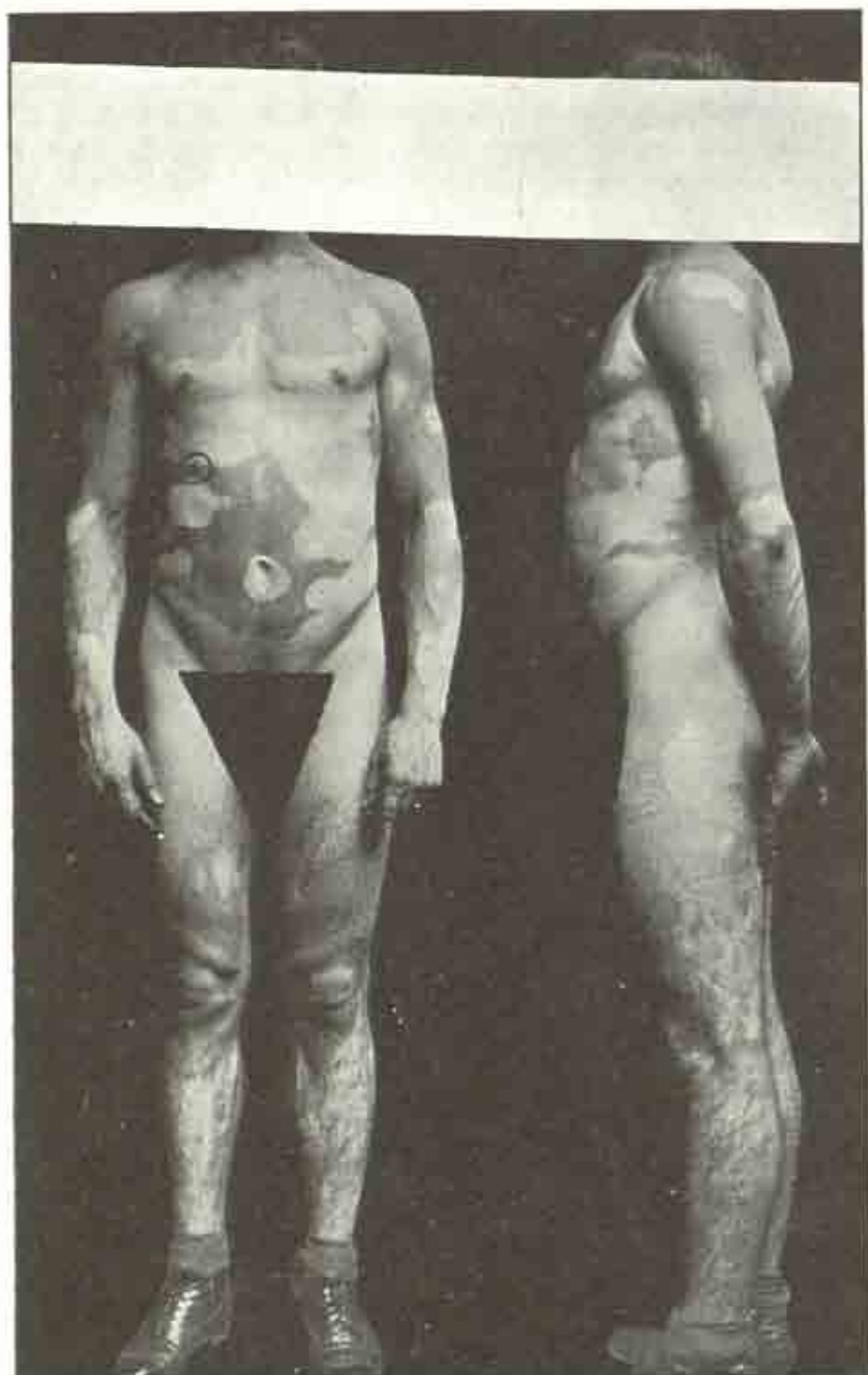
Two of the above described persons, numbers 7 and 14, have descendants. One of the two, number 7 and my chief historical informant, is shown in figure 75. By his first wife (normally pigmented, number 16) there are two children, numbers 19 and 20; number 20 is abnormally pigmented. By his second wife (normally pigmented, number 17) there were also two children, numbers 21 and 22; number 22 is abnormally pigmented.

The wife of number 14 (normally pigmented, number 18) has borne him two children, numbers 24 and 25; number 24 is abnormally pigmented.

The following descriptive list contains the second filial generation of number 1, and the third successive generation known to bear piebalds.

Number 19 is a normally pigmented male, born in 1862. He has a blond complexion, with brown hair and gray eyes. His health is excellent and he is a successful professional man. He is married, and his wife (normally pigmented, number 26) has borne him two children, numbers 30 and 31.

Number 20 is an abnormally pigmented female, born in 1871. She has a blond complexion, with brown hair and gray eyes. She has excellent health and is successfully engaged in public professional activity. She is widowed, and by her husband (normally pig-



ABNORMALLY PIGMENTED MALE (NO. 32 OF THE CHART)

mented, number 27) is the mother of number 32, shown in accompanying plates XX and XXI.¹

Number 22 is an abnormally pigmented female, born in 1894. She has a blond complexion, with brown hair and gray eyes. She has excellent health, is unmarried, and is a successful college student. The chief pigment spots of this subject are shown on the drawing in plate XXII. More facts will be presented later concerning her.

Number 24 is an abnormally pigmented female, born in 1882. She has a blond complexion, with brown hair and gray eyes. She has excellent health, is married, and by her husband (normally pigmented, number 28) has a son, number 33, born in 1908.

Number 25 is a normally pigmented male, born in 1884. He was married in 1912, has excellent health, and is a successful young man.

The following persons are members of the third filial generation of number 1, and the fourth successive generation known to bear piebalds.

Number 30 is a normally pigmented male, born in 1890. He has a rufous complexion, with light-brown hair and gray eyes. He is unmarried, has always had delicate health, and seems to be generally undervitalized.

Number 31 is a normally pigmented female, born in 1894. She has a blond complexion, with light-brown hair and gray eyes. She is unmarried, has excellent health, and is successful.

Number 32 is an abnormally pigmented male, born in 1892. He is a blond, with straw-colored hair and blue eyes. He is a successful university student in excellent health. He is shown in plates XX and XXI, and more facts concerning him will be presented later.

Number 33 is a normally pigmented male, born in 1908. He has a blond complexion, with light hair and blue eyes. His health has always been excellent.

DESCRIPTION OF PIEBALD INDIVIDUALS

Number 2 in the chart is the first such person of whom I have knowledge; and the only knowledge of him I now possess is that

¹ I am indebted to Dr Frary, of the School of Chemistry, University of Minnesota, for his photographic work in connection with the plates of persons shown herewith.

about 60 years ago he lived on a farm in southwestern Michigan and was "as spotted as a leopard"—as described by number 7. Concerning his two brothers (numbers 3 and 4) I have no knowledge other than that they once existed.

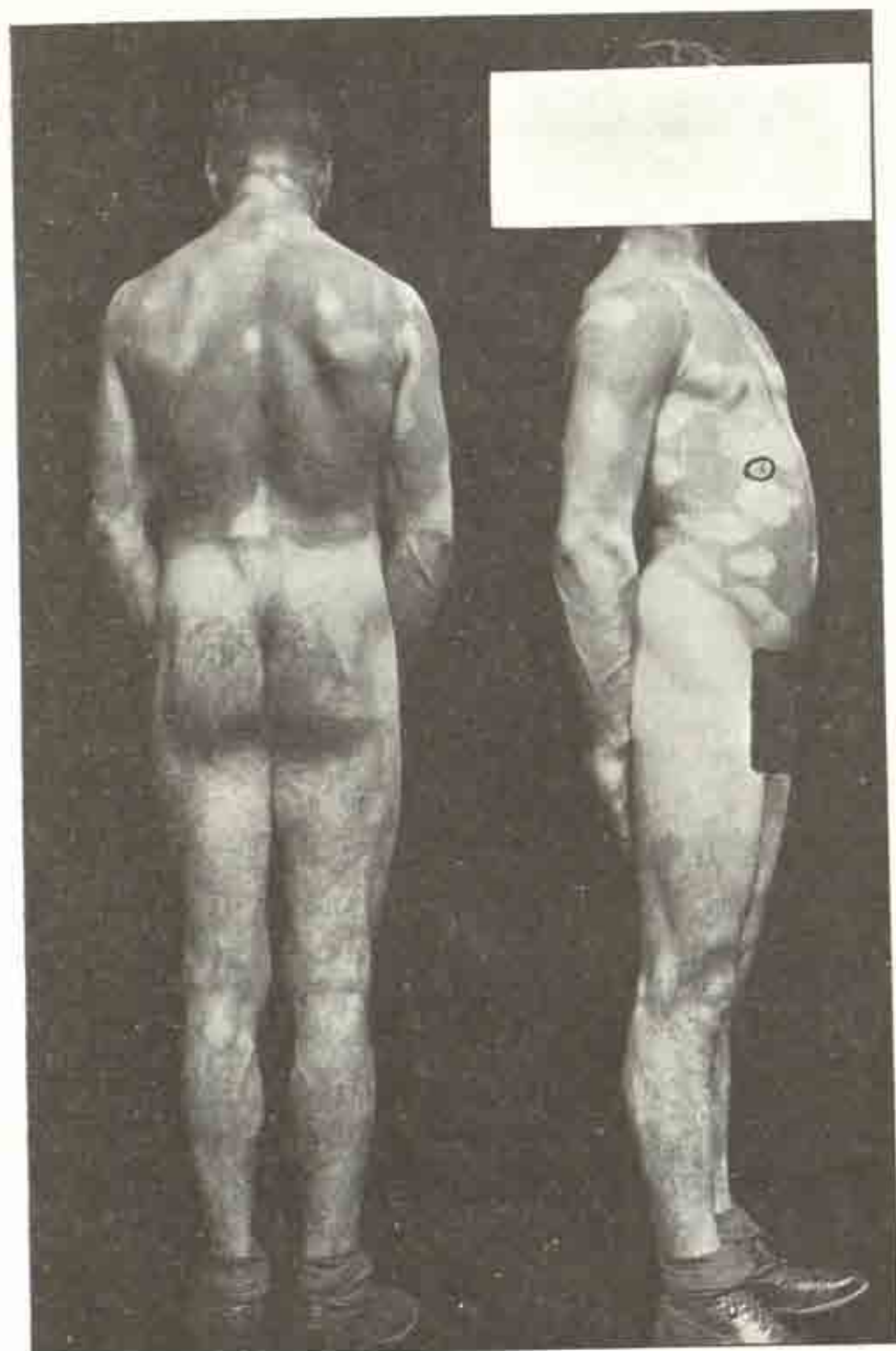


FIG. 75.—Rear view of pigmented male (No. 7 of the chart).

Our knowledge of number 7, shown as figure 75, is quite complete. And the facts disclosed by his descendants are as satisfactory as though one had been equipped to carry on breeding experiments with domestic animals. By his normally pigmented first wife, number 16, this man has two children. One of these, the son, number 19, is normally pigmented, and has two grown children, both of whom are normally pigmented. The other offspring of numbers 7 and 16 is number 20, an abnormally pigmented daughter. She is the mother of an abnormally pigmented son, number 32 (pl. XX and XXI) by a normally pigmented husband, number 27. By his normally pigmented second wife (number 17) this man

(number 7) also has two children; one, number 21, died in infancy, the other is the abnormally pigmented young woman shown in plate XXII.

Additional interest is developed in the problem of the inheritance



ABNORMALLY PIGMENTED MALE INO 32 OF THE CHART

of the character of abnormal pigmentation when it is known that female number 17, the normally pigmented second wife of number 7, has living today a twenty-two year old normally pigmented son (number 23) by a normally pigmented first husband (number 9).

The man, number 7, is a hard-working farmer in Minnesota whose health has been excellent during his 74 years, until recently when he was severely injured by a falling tree. His toil has been successful, so he has given a college education to the two children by his first wife, and his living daughter by his second wife is now a college student. He has the reputation in his home neighborhood of being a hard-working, "smart," very generous man, who knows more about general farming than most of his neighbors. He is keen and alert about personal and public matters, and the saving sense of humor runs through his philosophy of daily life. When I first consulted him in May, 1913, he regretted that unusual weather conditions had kept him for three days from reading the daily papers. This was a disappointment to him, as he was alive to the intricacies of the Balkan war and the daily developments in the national problem of tariff revision.

The abnormally pigmented young woman, number 22 (pl. xxii), is a college student in excellent health, whose physical development is above the average for her age. To substantiate

Gymnasium Records¹

NUMBER 22		AVERAGE OF 300 GIRLS
Age (years).....	18½	19
Height standing.....	115.7 cm.	110.3 cm.
Height sitting.....	61.5 cm.	61.3 cm.
NUMBER 22		AVERAGE OF 51 GIRLS
Age (years).....	18½	19
Height standing.....	115.7 cm.	115.7 cm.
Chest expansion.....	3.8	2.5
Grip, arm, right.....	30.00	27.3
Grip, arm, left.....	26.00	24.7
Chest, depth.....	9.5	9.78
Lungs, capacity.....	181.00	150.0

¹ This young woman (number 22) was measured, and the other measurement records were furnished me by Dr Anna Norris, Director of Physical Education for Women, University of Minnesota. The illustration (pl. xxii) is introduced to show only the principal pigmented areas.

appearances I present her gymnasium record at the age of 18 years and 10 months, as compared with 392 Connecticut and Nebraska college girls at 19 years of age, so far as the first two measurements are concerned. For the other measurements number 22 is compared with 51 of the above girls who were of the same height, as well as the same age, as herself:

These records show that number 22 is physically very safely above the average, and the number whose average is taken is sufficiently large to make the results of scientific value.

Her scholarship record practically duplicates the average of her 106 classmates, and it improves with experience in college.

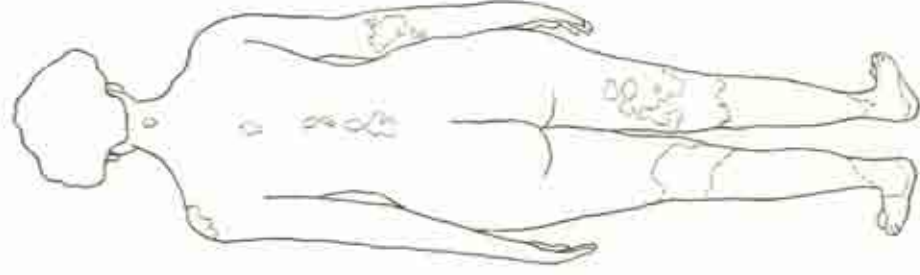
The young man (pls. xx and xxi) has a blaze-face such as is seen in Castle's negroes and also in most of the piebalds shown in *A Monograph on Albinism in Man*.¹

The blaze extends up to the crown of the head, where there is a small patch of white hair. White hairs occur also on the following parts of his body: both thighs in front, and slightly on the back of the left thigh; both shins in front; right side of pubic hair area, and entirely across immediately above the penis. There are no white hairs on pigmented skin areas, but there are many white skin areas producing only normally colored hairs.

The young man, number 32, has even a more favorable record in both the gymnasium and the class-room than the young woman:

Number 32 was far above the average when first measured—seen especially in his "total strength" of 772 points when a freshman as against 570.7 for the average of 1200 freshmen. This total strength has increased during the sixteen and one-half months which elapsed between the first and second measurements—advancing from 772 to 801. His heart action has also greatly improved. In his university a student's scholastic record is kept in terms of "excellent," "good," "pass," and "not pass." Since one's graduation

¹ Atlas, pt. 2, published by Karl Pearson, E. Nettleship, C. H. Usher, and B. C. Lamb, London, 1913. The first illustration published of Castle's piebald Negroes, so far as I have seen, is that of Sir Jonathan Hutchinson in an article entitled "On Palaeogenetic Face-pattern in Acroteric Piebalds," pp. 1479-1481 of *The British Medical Journal*, vol. 1, June 18, 1910. This plate was again reproduced as plate W (picture 138), entitled "The Three Striped Graces," in *A Monograph on Albinism in Man*, atlas, pt. 2, London, 1911.



THE PRINCIPAL PIGMENT SPOTS ON A FEMALE (No. 22 OF THE CHART)

depends on his percentage of "goods," an *excellent* and a *pass* cancel each other and make two *goods*. The following records are given, therefore, with the *excellent* marks omitted.

Gymnasium Records of Number 32 and 1200 Other Freshmen¹

	No. 32 Nov. 12, 1912	No. 32 Apr. 2, 1913	Average Meas. of 1200 Freshmen ²
Girth, chest, depressed.....	34+	34.2	33.1
" " inflated.....	37+	36.8	36.2
" " normal.....	35.5+	35.8	34.7
Capacity, lungs.....	251-	249	257
Times, push up.....	12+	12	7
" pull up.....	7-	10	8
" sum.....	19	22	—
" weight.....kilos ²	62.5+	63.9	61.9
Strength of arms.....	" 119	140	—
" chest.....	" 20+	17	12.8
" back.....	" 165+	193	161
" legs.....	" 375+	332	210
" right forearm.....	" 49=	50	49
" left forearm.....	" 44-	49	45
" total.....	" 772+	801+	579.7
Pulse, before push up.....	90+	68	77
" after " ".....	130+	117	110

Scholastic Records of Number 32 and Other Students

One hundred freshmen and sophomores (both men and women) selected at random averaged:

<i>Good</i>	<i>Pass</i>	<i>Not Pass</i>
$\frac{16}{27}$	$\frac{8}{27}$	$\frac{3}{27}$

Whereas, for the same two years number 32 averaged:

<i>Good</i>	<i>Pass</i>	<i>Not Pass</i>
$\frac{25}{27}$	$\frac{2}{27}$	$\frac{0}{27}$

¹ All measurements in this table were made for me by Dr L. J. Cooke, Director of Physical Education for Men, University of Minnesota, and his assistant, Mr William Foster.

² One kilo equals 2.2046 lbs. Weight and strength are expressed in kilos except push up and pull up, which are expressed in number of times. Measurements are expressed in inches and tenths of inches. Lung capacity is expressed in cubic inches. Pulse rate is expressed in number of beats per minute before and after strength tests.

The average marks of women are higher than those of men, so his record is clearly much above the average for men—as it is even above the average for both men and women.

The men in his fraternity averaged the first semester of 1912-13 as follows:

<i>Excellent</i>	<i>Good</i>	<i>Pass</i>	<i>Not Pass</i>
1 $\frac{5}{16}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	$\frac{3}{16}$

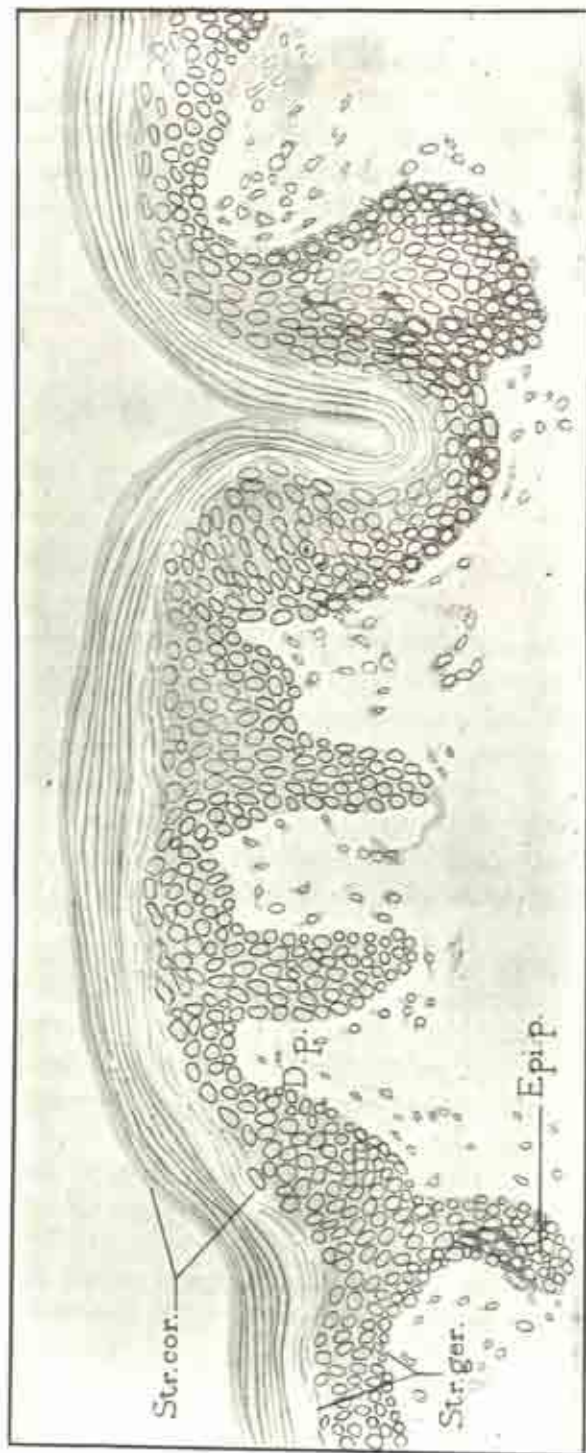
Whereas number 32 averaged for his first two years—

<i>Excellent</i>	<i>Good</i>	<i>Pass</i>	<i>Not Pass</i>
1 $\frac{5}{16}$	3 $\frac{1}{8}$	2	0

This record is considerably above the average of his fraternity fellows.

So, in spite of the rather unfavorable vital history of this family, the intimate facts presented about the three abnormally pigmented persons shown in the accompanying illustrations, and the facts known about the two other abnormally pigmented persons shown in the chart, present conclusive evidence that so far as those individuals are concerned the abnormal pigmentation does not appear to have weakened them physically, mentally, or morally (i. e., volitionally toward present-day ideals and conventional conduct).

When the genealogy chart is examined there seems no question about this statement that the character of abnormal pigmentation exhibited by persons numbers 32, 22, and 20 is hereditary; further, the character behaves like a simple Mendelian dominant; still further, it appears that these persons are heterozygous for this character of abnormal pigmentation. If this is true, then it is expected that number 1 (the father of number 7), and also males *c* and *e*, who are brothers, and who are fathers, respectively, of numbers 1 and 3, were also abnormally pigmented. So, also, the female *b* or the male *a* was probably abnormally pigmented; in the chart I have suggested that it was probably the male *a*. My reason for this will be made clear near the close of this paper.



DRAWING, UNDER LOW POWER, OF THE PORTION OF THE SECTION WHICH PASSES THROUGH THE BOUNDARY LINE BETWEEN THE LIGHT AND DARK AREAS OF SKIN FROM THE RIGHT SIDE OF NO. 32 (PLATES XX AND XXI)

This character of abnormal pigmentation is not sex-limited, as is plainly seen by the fact that numbers 2, 7, and 32 are males, while numbers 20, 22, and 24 are females; also by the fact that male 32 inherits directly from his mother, number 20, while females 20 and 22 inherit directly from their father, number 7; while, again, male 7 must have inherited through the male for three antecedent generations to arrive at a common ancestor for the first two known abnormally pigmented persons, numbers 7 and 2.

Though this character of abnormal pigmentation is hereditary, the visible patent condition of skin spotting is not known to be congenital. These three persons illustrated here show what is scientifically known as "partial or imperfect albinism." I shall call it "progressive albinism."

That white hairs and light skin areas of person number 32, the member of the youngest generation known to be pigmented, are strictly albinistic is proved by microscopic examination. White hairs from the head of this man were examined and proved to be without pigmentation. Plates XXIII and XXIV present three drawings of the skin taken from the right side of the body of this man. The place from which the skin was taken is marked by the circle shown in plates XX and XXI.¹

A piece of skin, including both light and dark areas, was fixed in a mixture of formalin, corrosive sublimate, and acetic acid immediately after excision. This was later imbedded in paraffin and cut into very thin sections. Some of these sections were stained and others were mounted without staining. The preservation of the epidermis proved to be perfect, and the pigment granules were well preserved in both the epidermis and corium. Both light and dark areas are included in the same section, thus greatly facilitating comparison of the two areas.²

Plate XXIII is a drawing, under low power, of the portion of the section which passes through the boundary line between the light

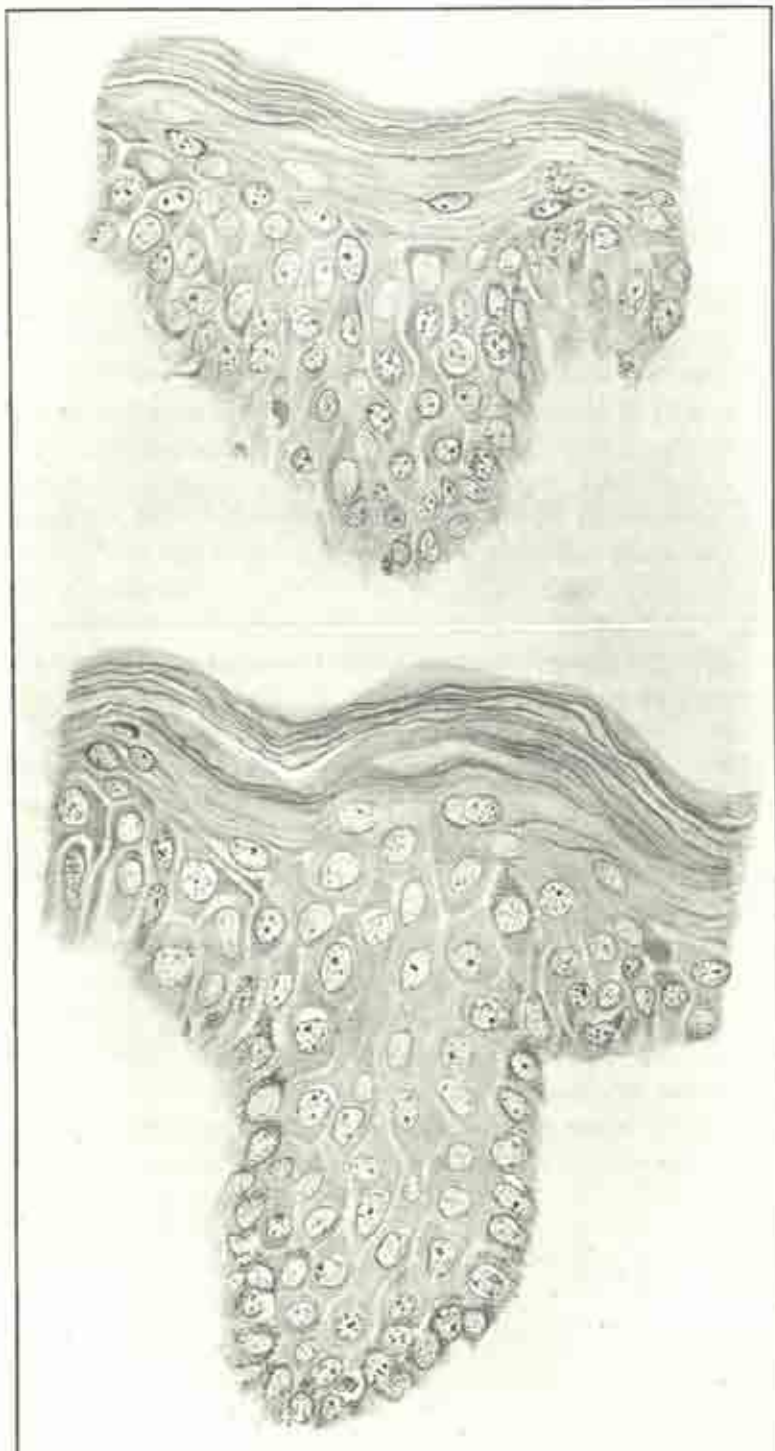
¹ The operation for the removal of this section of skin was performed by Dr. Earl M. Hare, of the College of Medicine, University of Minnesota.

² Dr. Hal Downey, of the Biological Department of the University of Minnesota, gave me unstinted time in the preparation and microscopic examination of the skin and hair of this man.

and dark areas. It shows the general structure of the skin and the distribution of the pigment granules in the section. *Str. cor.* is the stratum corneum; *Str. ger.* is the stratum germinativum; *Epi. p.* is an epidermal papilla; and *D. p.* is one of the papillæ of the connective tissue portion of the skin, the so-called dermis or corium. Plate XXIV reproduces two accurate drawings, under high power, of epidermal papillæ of the light non-pigmented area, and of the dark area, respectively.

In the living skin there is visible a sharp boundary line between the light and pigmented areas, as is well shown in plates XX and XXI, but in the microscopic sections such a sharp line is not so evident. In the section from which plate XXIII was made the first pigment granules appear in the epidermal process (*Epi. p.*) on the left of the figure. The figure shows that the pigmentation involves several cells of this papilla. In other sections examined the first pigment is not so abundant, and does not involve so many cells as in the one shown as plate XXIII. This is especially true of those sections in which the first pigment granules appear in the basal cells of the epidermis which lines one of the furrows of the skin. In those cases only a few cells contain the granules, and those first granules are small and not numerous in any one cell.

The epithelium of the light areas, as is shown in plate XXIII, is absolutely devoid of pigmentation, but the corium contains an occasional irregular or branched pigment cell. As we approach the dark area the scattered pigment cells of the corium are seen to become more numerous, especially along the ducts of the sweat glands, but as yet no pigment is to be seen in the epithelium. Examination of several sections of the same piece of skin show that the pigment of the Malpighian layer appears first in the basal layer of cells of the epithelium lining one of the furrows of the skin, or in the basal cells of the epithelial processes between the dermal papillæ (pl. XXIII, *Epi. p.*). These first pigment granules are confined to groups of four or five cells in the above locations, the intervening cells being free from them. As we pass further into the dark area there is a gradual increase in the number of cells which contain pigment granules, and also in the amount of pigment within the



DRAWINGS, UNDER HIGH POWER, OF EPIDERMAL PAPILLAE OF THE LIGHT NON-PIGMENTED AREA (UPPER), AND OF THE DARK AREA (LOWER)

individual cells. The cells which contain the granules are still confined to the grooves and epithelial processes, but the pigmentation gradually spreads to the sides of the epidermal papillæ and into the middle layers of cells of the stratum germinativum, where it is found in all but the two or three uppermost layers. However, this is not true of all of the epidermal papillæ of even the most highly pigmented region, as is seen from an examination of plate XXIV (upper) where most of the granules are in the basal layer. In papillæ of this type there are usually a few scattered cells above the basal layer which contain pigment granules. Three such cells are seen in the lower drawing of the same plate. In the region of greatest pigmentation the granules are not confined absolutely to the epidermal papillæ and stratum germinativum lining the furrows, but may be seen in a few of the cells covering the dermal (connective tissue) papillæ. In this location the granules are very small, and they are not numerous.

In general the pigment tends to collect in the basal layer of the epidermal processes and of the epithelium lining the grooves, but when it becomes very abundant it spreads to the upper layers and to that part of the epithelium which forms a covering to the connective tissue papillæ. All the granules are within the epithelial cells; none were seen between the cells.

The pigment granules may be found in all parts of the cell, but usually they are more abundant in the outer portion of the cell, toward the free surface of the skin (pl. XXIV, lower). If granules are present in the basal region of the cell they are usually smaller and less numerous than in the region of the outer pole.

In the light areas of the skin the irregular branched pigment cells of the corium (connective tissue portion of the skin) are very rare, but as these cells are not numerous in normal skin, the number seen here probably corresponds to the normal. In the pigmented areas their structure and location are the same as in the normal skin, but their increase in number is far beyond the normal. The epidermis of the dark areas contains a great deal more than the usual amount of pigment, but the general location and distribution of it are about the same as in the normal skin.

Careful study of the sections leads to the conclusion that there is nothing abnormal about this skin excepting the peculiar distribution of its pigment. There apparently is concentration of pigment in the dark areas with corresponding deficiency of it in the epidermis of the light areas, but its general form and distribution in the dark areas is normal. It is as though there was a repellent force in certain foci of the skin driving the pigment cells to other areas. The lack of pigment is the only feature which distinguishes the light area of the skin from the dark. The dermal papillæ and the epithelial processes between them are of the same general shape and size in both areas of the skin.

Without going further into details at this time, I may summarize the apparent positive results of this research so far in hand, as follows:

That in the family before us we see—

1. Hereditary spotting of the skin.
2. The character of spotting behaves as a simple Mendelian dominant.
3. The piebald persons are heterozygous for this character of spotting.
4. The condition of spotting is albinistic, and is progressive rather than fixed, giving progressive albinism—sometimes called dynamic leucosis.

It may be well to present here definitions of albinism in its three commonly recognized phases:

Complete albinism affords no visible pigment anywhere in *skin*, *hair*, or *eyes*.

Incomplete albinism affords visible pigment of various degrees of diffusion everywhere in *skin*, *hair*, and *eyes*.

Partial or imperfect albinism affords visible pigmentation limited to areas separated by unpigmented areas. This gives "piebald" and "spotted" cases.

Concerning the probable close interrelation between these various phases of unpigmented skin, Pearson says:

"When we consider the relative rareness of complete albinism, of the spotted or splashed condition and of xanthism, their relatively frequent coincidence in

the same stock suggests that these abnormal pigment conditions are not wholly independent, and that as a working hypothesis it is reasonable to suppose that complete albinism, partial albinism, incomplete albinism, and xanthism, all static forms of leucosis, are phases of the same process and are probably linked with leucoderma and possible other forms of dynamic leucosis. By 'linked' we suggest that they mark the complete, incomplete, local or progressive failure of the same metabolic process, which may never start at all, never start in certain areas, or be imperfectly started, and again being started may fail to maintain itself; further, that every variety of this failure may individually or collectively be associated with certain stocks, which may either show hereditary failure of one phase, of several, or exceptionally of all phases of pigment metabolism."¹

Pigmentation is due to *pigment metabolism*. In "complete albinism" pigment metabolism completely fails to start. In "incomplete albinism" pigment metabolism occurs only incompletely. In "partial or imperfect albinism" pigment metabolism locally fails or never starts. In "progressive albinism," or dynamic leucosis, pigment metabolism, though having apparently once started at some time, fails in certain areas.

Some of the problems we are still working on in connection with this study are the following:

1. Whether the albinistic areas are more heavily haired than the pigmented areas, since complete albinos are frequently said to be more hairy than normally pigmented persons. Schwalbe says that the skin under heavily coated growths of hair is lighter in color than in less heavily coated areas. Max Weber, Rawitz, and Kuekenthal say, conversely, that the most heavily pigmented areas are denuded. If Weidenreich is right in saying that "we are accordingly justified to see in the hair a special organ for accumulating pigment of the cutaneous or epidermal pigment layer," then these albinistic areas will be found to be more heavily haired than the pigmented areas.

2. Whether the albinistic areas extend their borders after once having been known, or whether there is, instead, a progressive failure of pigment metabolism within a definite area.

¹ *Anomalies of Pigmentation among Natives of Nyasaland; A Contribution to the Study of Albinism*, by Dr Hugh Stannus Stannus, pp. 333-365 (quotation from pp. 361-362), *Biometrika*, Oct., 1913.

3. Whether an at-one-time albinistic area ever revives within itself the process of pigment metabolism.

4. The meaning of the median dorsal light area. Castle found a dark median dorsal area on the negro family he recorded. The dorsal area of most vertebrates is more heavily pigmented than adjoining areas; yet there is exception in the case of certain cattle with the white "line-back," and the frequent case of skunks with white patches along the dorsal line. I accept the theory so well outlined and defended by Weidenreich¹ that the function of cutaneous pigment in vertebrates is to throw off the penetrating light and to transform light rays into heat rays. Yet if this theory is true, what is the meaning of the consistently light median dorsal area in the persons illustrated herewith?

5. (In general.) The entire family, just so far as collaterals and descendants may be discovered, will be studied as completely as possible as a check on the work so far done.

The following pathologic description of the first man now known to have borne in America the patronymic of this spotted family in consideration, and who lived in New England in 1668, is worth preserving in this place. The description is found in a letter of a physician dated October 4, 1668, and copied by him on the fly-leaf of one of his medical books. I am indebted to the librarian of a New England college library for the corrected copy of this epistle, which follows. I present it with the suggestion that if more complete research proves, what members of this family believe, that this early New Englander is their family ancestor, his physical condition may have been the cause of the present hereditary skin spotting. It was because of this possible connection that I preferred to suggest in the genealogy chart that it was the male *a* instead of the female *b* who was probably abnormally pigmented.

¹ Deacon [George] Bartlett: I have been often solicited to doe for ——— [name given in original letter] in his sad condition, & have oft visited him & administered in time of his distemp: since his sores breaking out and

² Franz Weidenreich, *Die Lokalisation des Pigmentes und ihre Bedeutung in Ontogenie und Phylogenie der Wirbeltiere*, pp. 59-140 in *Separat-Abdruck aus der Zeitschrift für Morphologie und Anthropologie*, Stuttgart, 1912.

running I have seen them, used meanes to cleanse them & have from time to time informed them that he must have constant attendance, & be under a course of phisick if his life be saved, if meanes be not used he will live long in misery, if much meanes be used it is not for one man to beare the burden, nayther is one only called to shew mercy. I have not refused to attend him, but rather desyre some other, & I will be double my portion towards the expence. Whoever attends him, it will be double the charge to attend him in the place where he is, wherever comfortable dyet must be sutable to his weaknes & distress, & attendance added beyond w^h his wife can doe. a society of Indians will loyne helpfulnes to one of there owne in distress. he must take a course of phisick to Divert the currant of humors if one running sore be healed, the humors will have vent at another place, & p^resently will be another swelling they say he is to weake to take phisick, but tis a stronger thing to dy then to take phisick, & if he becomes tenn times weaker, yet then he must take phisick or dy. these things I write to discharge myself, & let the loss of life & neglect of mercy ly at the right doore."

Subsequent research shows that the man in question died October 16, 1668, or twelve days after this descriptive letter was written.

UNIVERSITY OF MINNESOTA
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PETROGLYPHS OF ST VINCENT, BRITISH WEST INDIES

BY THOMAS HUCKERBY

THE island of St Vincent was discovered on the 22d day of January, 1498. This being, according to the Spanish calendar, the day of St Vincent, the island was named in his honor. At that time it was inhabited by a large number of Indians. Dr Coke states that there were two distinct tribes, Red and Black Caribs.¹ There are many evidences of long prehistoric occupancy, of which the petroglyphs are among the most important.

Speaking of the West Indies, Dr J. Walter Fewkes states² that "not the least significant of the many survivals of a prehistoric race in the West Indies are rude pictures, cut in the rocks and called 'pictographs' or 'petroglyphs.' A study of their forms, geographical distribution, and meaning is an important aid to our knowledge of the origin and development of Antillean culture: it affords valuable data bearing on the migration of the race and points the way back to its ancestral continental home." The above statements do not too strongly set forth the position in relation to this important subject. Tribe may have succeeded tribe in the occupancy of these islands, but the petroglyphs have remained in the same position as they were when first chiseled by the prehistoric artist. Such is not necessarily the case, however, with the stone implements, earthenware utensils, and other artifacts which are constantly coming to hand, since it is certain that many of these were brought by the various tribes when they migrated to these islands from their original homes.

The full significance of the West Indian rock-carvings cannot be realized until all the examples known to exist in the various islands have been carefully photographed and compared with the examples found on the mainland. As a preliminary contribution toward the accomplishment of this desirable object, this short

¹ T. Coke, *History of the West Indies*.

² *Annual Report of Bureau of American Ethnology*, 1903-04.



A. PETROGLYPH, DEEPLY INCISED; BARROUALLIE, ST VINCENT



B. BOWDER, DEEPLY INCISED; BARROUALLIE, ST VINCENT

article is written. At the present time we propose to deal exclusively with the petroglyphs of St Vincent. On some future occasion, should the opportunity be presented, we hope to be able to consider the other sections of this field. Probably there is not an island of greater interest than St Vincent to the student of the rock-carvings of the Antilles. It also may be said that throughout the West Indian archipelago there is nothing of greater archeological importance than the St Vincent petroglyphs.

For the purpose of the present article the petroglyphs now being considered may be classified under three heads: (1) Deeply incised, (2) shallow, and (3) cave. This classification is followed herein when individual examples are discussed.

The process by which the distinct types of petroglyphs were made must have been somewhat different. In all probability examples of the first and third classes were produced by means of a primitive chisel; the outlines of the shallow type may have been first scratched out and then finished by friction.¹ Im Thurn states that in British Guiana the deeply incised and shallow engravings are never found in the same district. In St Vincent, the areas in which they are found are separated by only a few miles. Nevertheless it is quite possible that they represent different periods and cultures.

Our notes may incidentally throw some light on the debatable question of the antiquity of the aboriginal occupancy of St Vincent. It is an accepted fact that Indians occupied this island under settled conditions long before the coming of Columbus. But how long? This is a question for which it seems impossible to find a definite answer. Judging from the appearance of the rock-engravings and the fact that the older figures had probably become effaced by the time the later incisions were made, it would seem that man found a home in this island much farther back in prehistoric times than is often supposed. Unfortunately it is not possible to estimate, with any degree of precision, how long a period would be required for the petroglyphs to have become obliterated by natural processes. It is probable that occupancy of the island gradually developed from occasional visits to settled and permanent residence.

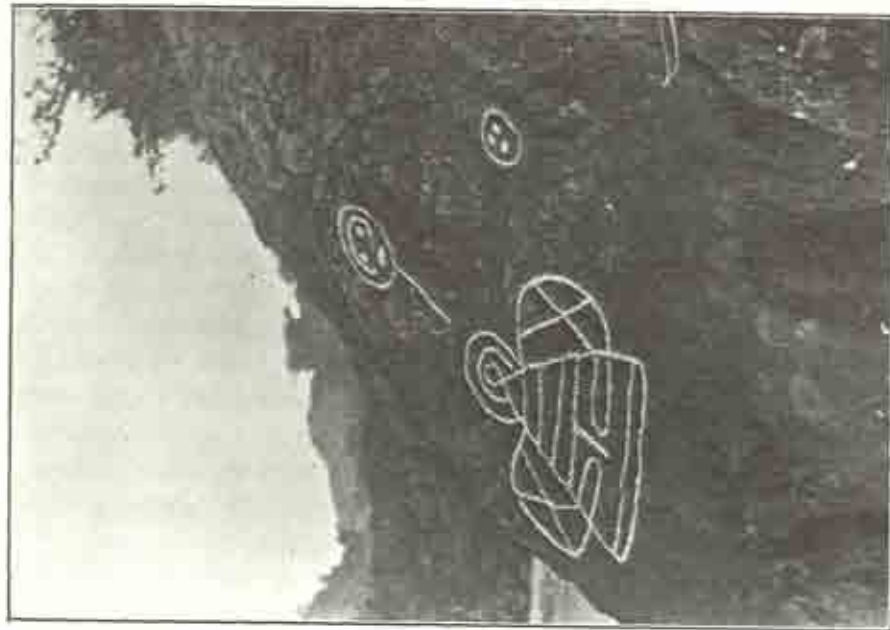
¹ Everard F. im Thurn, *Among the Indians of Guiana*.

Another question of importance to the thoughtful student is, What tribe was responsible for these art remains? Generally it has been assumed that the petroglyphs date from the period of the Carib occupancy, but this theory should not be given undue weight. At the time of the discovery, the Carib women spoke a different language from that of the men, from which fact it has been conjectured that the males of the community represented the intruders, and the females the original inhabitants of the island, the supposition being that the Caribs had defeated the aborigines, exterminated the men, and taken the women as their wives. To account for the persistence of the two languages it has been said that the females were the slaves of the males and that there was very little actual association between the two. All this may be true, but it would not satisfactorily explain the existence of this condition over a long period. In process of time, and that not very prolonged, were the theory above mentioned tenable, the women would inevitably adopt the speech of the men. Hence it follows that the Carib invasion must have taken place not very long before the time of the discovery; and taking this fact into consideration, together with the almost certain antiquity of most of the petroglyphs, it seems unlikely that all the examples are the work of the Caribs. There may have been several prehistoric tribal migrations from various parts of the mainland. The large number of petroglyphs of one class suggests that the occupancy previous to the incoming of the Caribs extended over a considerable period. It is probable that most of the Antillean islands were peopled by one tribe before the Carib conquest, and the deeply incised figures may have been produced by them. The Petit Bordel petroglyph is the only one of the shallow type. We are of the opinion that this represents a much later period than the petroglyphs of the deeply incised class. If it is possible to ascribe any of the rock-carvings to the Caribs, it can reasonably be done in this case.

What these pictographs originally signified it would be impossible to say. We cannot imagine that they were produced simply to while away the time. The recurrence of particular figures (see the notes on Buccament Cave) indicates a definite intention. Prob-



A. PETROGLYPH, DEEPLY INCISED; HUTLAND VALE, ST VINCENT



B. PETROGLYPH, DEEPLY INCISED; INDIAN FOUNT, ST VINCENT

ably some of the petroglyphs had a religious significance. In every part of the world, at some time or other, one of the most common objects of worship has been a block of stone. In St Vincent it is a very common belief that such stones were used as sacrificial altars. This is not impossible. It is a well attested fact that the Indians of the time of the discovery were cannibals. When Columbus discovered Guadeloupe he found the huts of the natives strewn with human limbs and heads. Some of the petroglyphs may be crude attempts to depict the forms of dead chiefs whose spirits were worshipped and whose anger was appeased by the oblation of the blood of human sacrifice. Probably these were regarded as intermediary spirits through which they approached the supreme deities. All the petroglyphs may indicate centers of religious worship.

While many of the rock-carvings of St Vincent are of the deeply incised type, they do not show much resemblance except in the case of a few conventional heads. There is some similarity in type between the central figure of the one at Rutland Vale, Layou, and the larger engraving of the Indian Point petroglyph. The large figure of Yambou Pass Rock (fig. 77), so far as depth of incision is concerned, comes between the deeply incised type and the shallow engraving of Petit Bordel. With the exception of engravings of the Buccament Cave, they have all been incised in hard volcanic rock.

It is worthy of note that all the petroglyphs in St Vincent are found near the old sites of villages. We believe it to be a mere coincidence that many of them are found near rivers. Aboriginal man would naturally establish his home in close proximity to a supply of fresh water; and assuming that the petroglyphs indicate positions of importance, they would probably not have been placed far from the scene of his everyday life.

The petroglyphs of the first and third classes above mentioned are of the same type as those found in the other Antillean islands, and indicate the same culture, while the Petit Bordel petroglyph and the figures of the Buccament Cave point to a connection with the culture of the mainland. The Mexican culture, however, does not appear to have had any influence.

In conclusion we may say that in preparing the photographs from which the accompanying illustrations are prepared every effort has been made to give reliable representations of the actual petroglyphs. Where any doubt exists, it has been stated in the notes on the particular petroglyph under discussion.

DESCRIPTION OF PLATES

PLATE XXV, *a*.—This engraved rock is found in the middle of the Glebe field and is situated about 200 yards to the left of the highway from Barrouallie to Kingstown. The slope of the boulder faces westward. The incisions have a depth averaging about a quarter of an inch. Particular attention is called to the halo of thirteen rays. This figure may indicate a solar symbol. The basin-like depression immediately below the bottom of the engraving seems to be a natural formation.

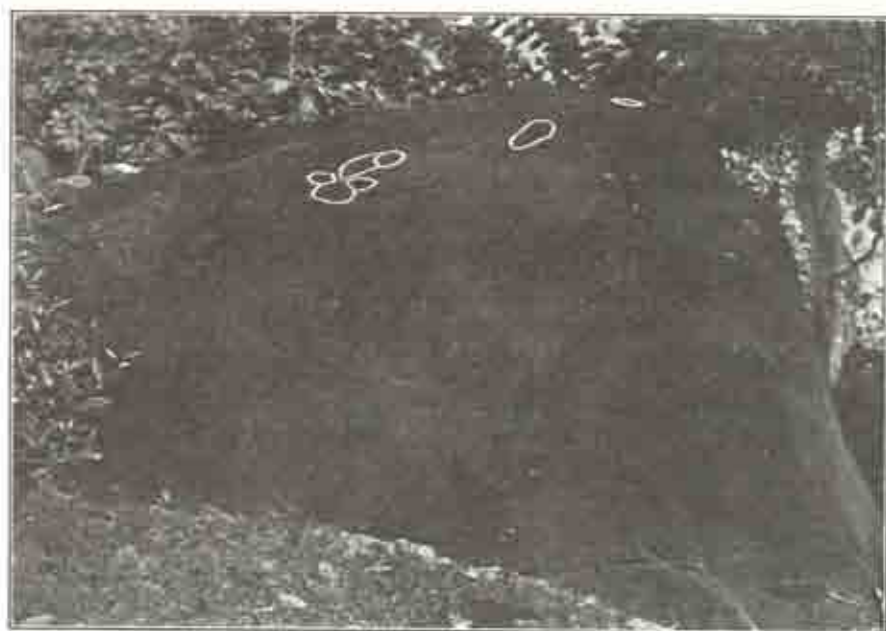
PLATE XXV, *b*.—This rock lies about 300 yards from the petroglyph shown in Plate XXV, *a*. The hollow of the top seems to have been made by pounding, and the incisions used to sharpen pointed implements.

PLATE XXVI, *a*.—This petroglyph is known to the natives of the island as "Jumbi Rock", or "Marked Stone", and is sometimes called the "Sacrificial Stone". It is situated about a mile up the Rutland Vale valley. The side of the stone on which the figures are seen has a southerly aspect. A very old man living in the valley probably correctly states that he remembers the time when the engraved surface was in a horizontal position. It will be seen from the illustration that the river washes the base of the stone. It may be that, some time in the past, the river slightly changed its course at this point and that what was originally the foundation of the southern side of this large rock was washed away. The oblique eyes of the central figure are unique. The cup-shaped cavities at the top of the lines, leading down to the two faces on the left, are considerably deeper than the parts of the engraving. There are indications of older figures on the face of the rock. A burial urn containing a skull and surrounded with other bones was discovered by the writer in this valley. A drawing of this engraved boulder has been published by Karl Sapper in his paper on St Vincent, *Globus*, Bd. LXXXIV, Heft 24, Abb. 8, Dec. 24, 1903.

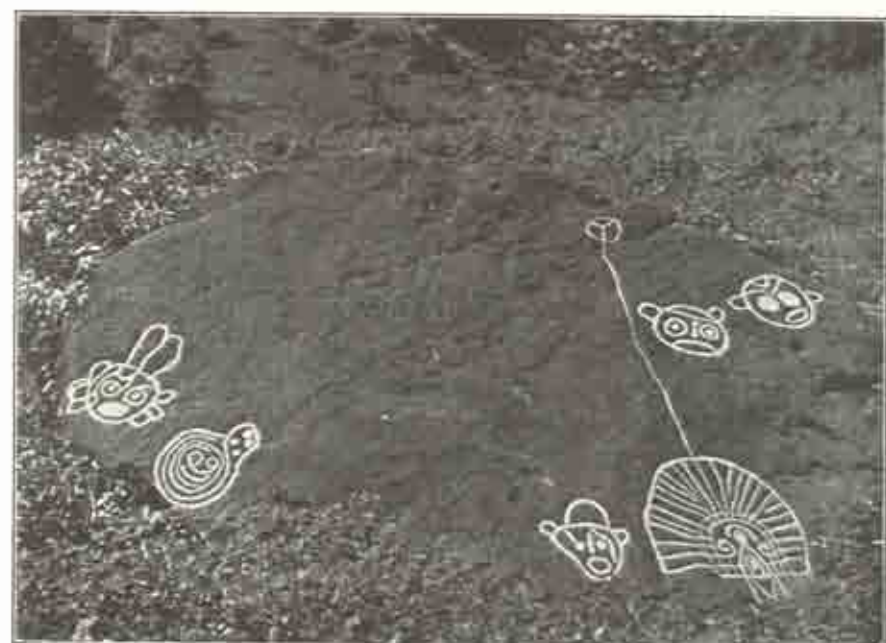
PLATE XXVI, *b*.—This petroglyph is on the extreme point which lies between Indian bay and Villa bay. The rock faces south. The position of an uncertain line is indicated by the dots seen to the left of the engraving.

PLATE XXVII, *a*.—This is the most recently discovered petroglyph in the island. It lies to the right of the highway from Kingstown to Lodge Village. A small stream flows past the base of the rock. The engraved surface faces westward.

PLATE XXVII, *b*.—This engraved rock is found about 300 yards nearer to



A. PETROGLYPH, DEEPLY INCISED; LODGE VILLAGE, ST. VINCENT



B. PETROGLYPH, DEEPLY INCISED; YAMBOU PASS, ST. VINCENT

Escape Village than the one seen in Plate XXVIII, *a*. The large figure at the bottom is the most interesting; it is not so deeply cut as the other engravings, and the incisions have a comparatively fresh appearance. The representation of the snake is the only one found in the island. The face of the rock contains a fair number of undecipherable markings. Both the Yambou petroglyphs have the rising sun. Attention is called to the cup-shaped cavity below the head on the right. There is some similarity in the formation of the ears of the heads of this petroglyph to Porto Rican examples. Between the two petroglyphs found in this valley is a flat rock bearing a circle which encloses a cross (fig. 76).



FIG. 76.



FIG. 77.



FIG. 78.



FIG. 79.

PLATE XXVIII, *a*.—This petroglyph is situated in the Yambou pass, on the windward side of the island. It stands in the middle of a pasture, which is dotted with large volcanic boulders. Probably the head on the left (fig. 77) originally had two projections. There is a faint line on the other side, and there are very faint indications of other marks on the central face (fig. 78), but they are not sufficiently clear to warrant their inclusion. On the back of the rock there is a face of a common type (fig. 79). The only indistinct line given is the one at the bottom of the monkey's body. During a previous visit we discovered traces of an original mark, but on this occasion we failed in our efforts to locate it. One of the heads is highly interesting: it appears to represent the head of a female; the hair is plaited, and the ear pendant seems to represent a peculiar kind of earring. Porto Rican petroglyphs have horned heads similar to some of the engravings in this example.

PLATE XXVIII, *b*.—This petroglyph is situated on the right of the Woods highway from Petit Bordel to Linley valley, and forms one of the boundary marks between the Petit Bordel and Rose Bank estates. The rock has an almost vertical front and faces the east. Most of the engravings are about half an inch wide and are very shallow. The bottom figures appear to be incomplete. Several horizontal lines are scratched across the lower part of it. It is not possible to say if these formed part of the original engraving; if they did, they probably indicate the process of operation. It may be that the figures were first outlined with a sharp implement and then finished by rubbing with wet sand. The three small figures at the top of the left-hand figure are not very distinct. There is a similarity between the engraving on the right and one of the St Kitts examples.

PLATE XXIX, *a*.—The cave in which these petroglyphs are found is on the left side of the Buccament valley, about 200 yards from the seacoast. It is cut out of the tuff agglomerate flow forming the ridge, which limits the extent of the valley

on the southern side. The cave is about 45 feet high and 30 feet wide, with a depth of at least 20 feet. The front opens into the valley. A large portion of the rear wall is covered with engravings. It was found exceedingly difficult to make a photograph giving a well-defined view of all the markings. Figures not included in the exposure are shown in figure 80, a, b, c, d, and figure 81. All

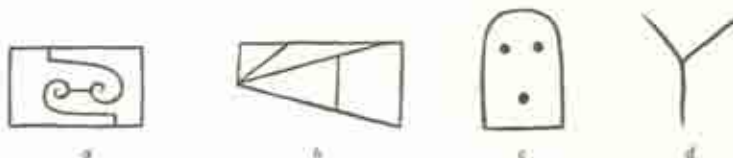


FIG. 80.

the engravings shown in figure 80 are cut in the rock which forms the shelf to the left of the cave. Figure 81 is scratched in the soft part of the tuff agglomerate and is situated a few feet above the shelf.



FIG. 81.



FIG. 82.



FIG. 83.



FIG. 84.

PLATE XXIX, b.—This photograph presents a view of the markings found at the entrance of the cave. Some time ago the land in the immediate vicinity was brought into cultivation. The burning of the soil revealed a large number of fragments of pottery and a few rubbing stones. These fragments do not manifest any variation from the other sherds found in different parts of the island. It

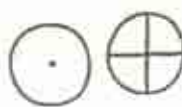
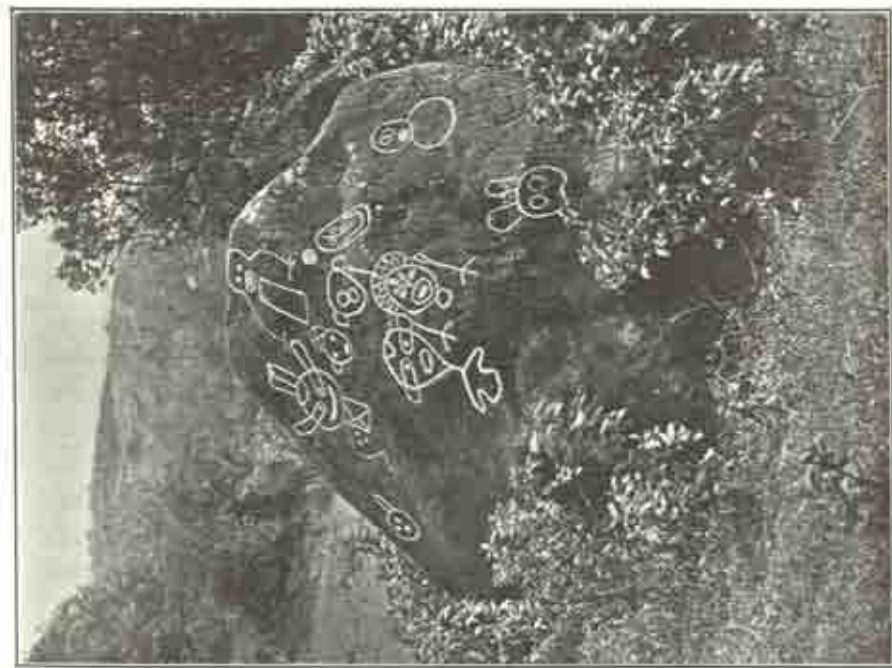


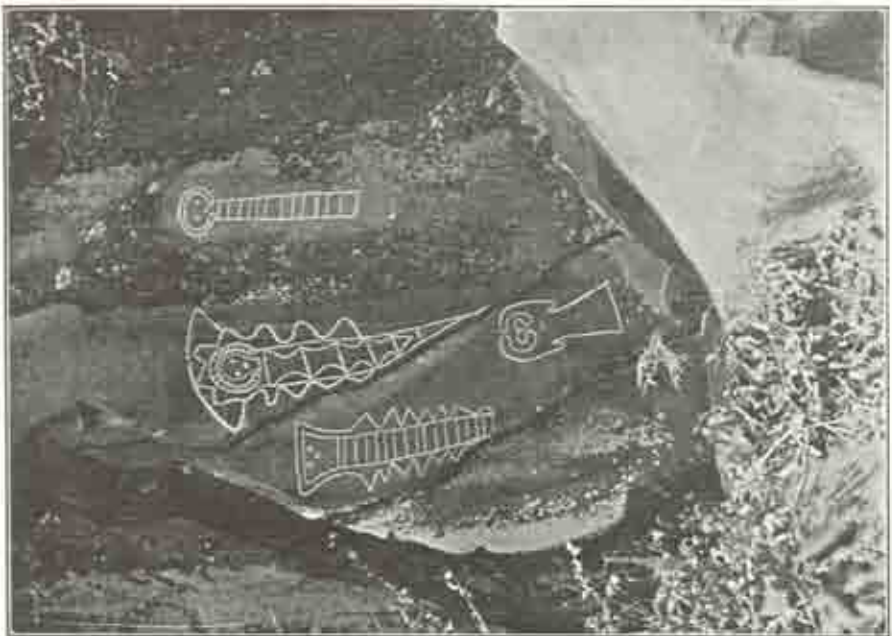
FIG. 85.

may be interesting to note how one of the figures (fig. 82) seen on the right side of the photograph recurs time after time on the other petroglyphs. It is found at Safe Creek, Wyoming; Ojo de Benado, New Mexico; Ometepe, Nicaragua; and at Cachoeira de Ribeiro, Brazil. An earthenware stamp bearing this figure (fig. 83) has just come to hand from Carriacou. The character, with not quite the same curve, is represented at Chicagua Rapids, Venezuela. Another figure (fig. 84) with slight modifications is found on an engraved rock at San Esteban, Venezuela. Other figures of this petroglyph are found in various parts of South America, two of which (fig. 85) seem to be very common.

THE HYE MUSEUM
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A. PETROGLYPH, DEEPLY INCISED; VAMBOU PASS, ST VINCENT



B. PETROGLYPH, SHALLOW ENGRAVING; PETIT BORDEL, ST VINCENT



A. PETROGLYPHS ON BACK OF WALL OF BUCCAVENT PICTURED CAVE, ST VINCENT



B. PETROGLYPHS AT ENTRANCE OF BUCCAVENT PICTURED CAVE, ST VINCENT

THE CHEYENNE MEDICINE LODGE

By GEORGE BIRD GRINNELL.

THE ceremony of the Medicine Lodge, or Sun Dance, is one of the most important religious festivals known to the Plains Indians, although certain tribes living on and near the plains do not practise it, and so far as known never have done so.

The ceremony always has been misunderstood and has been generally condemned. Its form is constantly changing; in some tribes it is being called by a new name, and the old ritual and ceremonies are being forgotten. It seems time therefore that something should be said to correct erroneous views concerning it that have long had currency.

Of the acts which formerly took place during this ceremony, the most striking had to do with the personal suffering of some of those who were present, and generally it has been believed that a part of the ceremony of the Medicine Lodge was the infliction of the so-called torture frequently endured at the time and within the inclosure where the ceremony was conducted. A generation ago it was declared that this torture—swinging to the pole and dragging buffalo skulls—was self-inflicted for the purpose of making warriors, the implication being that no man might be considered a warrior who had not endured these sufferings. Other writers have said that the suffering was undergone by young men who wished to show that their hearts were strong; in other words, that it was a test of endurance. Something of this sort Catlin implies in his account of the Medicine Lodge ceremonies, known as *O-kee-pa*, among the Mandan. These beliefs many years ago led the Government to interfere with the Medicine Lodge. The Indian agents declared that the ceremony was a producer of warriors, while the missionaries, who held every form of religion wrong except the particular one professed by each, were repelled by the spectacle of the suffering, and both agreed that the ceremony ought to be stopped. So the Indian Bureau forbade the Sun Dance in many places.

The Indian agents and the missionaries were not alone in believing the torture to be a part of the Medicine Lodge. Some ethnologists have had the same impression. In his recent interesting *Handbook of the North American Indians of the Plains*, Dr Wissler says: "The Sun Dance presents several features variously combined and distributed. These are the torture, the circular shelter of poles, the use of a sacred bundle, the erection of a sun pole, and the dancing ceremonies."

In his article on "Ceremony" in the *Handbook of American Indians*, Dr G. A. Dorsey says that the self-inflicted torture "often forms an intrinsic part of the public performance." This is a general statement, with no specific reference to the Medicine Lodge ceremony.

On the occasion of a Medicine Lodge ceremony a dozen or fifteen years ago it was reported that two students of ethnology hired a young Indian to have his back pierced and to drag about one or more beef skulls. I do not know that this ever took place, but at the time it was widely heralded and was used as an argument for stopping the dance. If this happened, the boy, like those who hired him, may have believed that he was going through a part of the Medicine Lodge ceremony, but older men would have set them right, and explained the true motive of this more or less painful proceeding.

Persons who have been much among Indians recognize the extraordinary difficulty often found in getting at the fundamental motive which lies behind any act. They recognize also the almost universal tendency among observers to credit the primitive people whom they see with the same motives and the same methods of reasoning that the observers themselves employ. Since in old times torture in some form or other often took place during and at the ceremony of the Medicine Lodge, it was natural enough that observers should take it for granted that this torture was a part of the ceremony. This was not true in the case of the Cheyenne Indians, nor, in my belief, was it ever true in the case of any plains people. The suffering of the Medicine Lodge was not for the purpose of making warriors or to show endurance, nor was it any part of the ceremony. Instead, it was, in all cases, the payment by the individual of some vow

that he had made; was a sacrifice of self to bring good fortune or to avert misfortune in the future, or else was the carrying out of some instruction received in a dream. Sometimes the motive was merely loyalty to a friend—a wish to share his suffering.

The sacrifice of the body is, I suppose, as old as religion and is confined to no sect, creed, or race. It has been universally practised as a means of invoking the favor of the powers which rule the universe. Primitive people practise it in all lands. Civilized people do the same today. The priests of Baal, when they called on their God to send down fire from Heaven to consume the sacrifice of Elijah, cut themselves with knives as they prayed to him. The Indians swing to the pole. The flagellants lashed themselves with whips, and the so-called Penitentes in the Southwest with the branches of the cactus, and endured the sufferings of crucifixion. The monk of the Middle Ages wore a hair shirt, and the woman of today fasts during Lent. All these are different expressions of the same feeling.

The ceremonial of the Medicine Lodge is a religious occasion of great importance, transmitted, the people say, through many generations. It celebrates the rebirth of life on the earth, the return of the season of growth. The Cheyenne call it "the renewing of the earth." The occasion, the time, and the place are sacred, and the ceremony is associated with certain sacrifices, the offering to the spiritual powers of acceptable gifts, accompanied by the purification which comes from the abstention from food and drink for a period of a few days.

The mysterious powers are present and receive the prayers, offerings, and sacrifices, and the occasion is one peculiarly favorable for the performance of those acts in which spiritual assistance is needed. The edifice, so called, of the Medicine Lodge is the center of these helpful influences, but they affect the whole gathering. All who are present in the camp receive a blessing in some degree. For this reason, in old times, every member of the tribe wished and was expected to be present. Messengers were sent about to every small camp to notify it of the time of the ceremony. If, as rarely happened, some man was slow in coming to the meeting place, a

band of soldiers was sent to bring him in. If he was obstinate and still delayed his coming, he was fetched by force, and harsh measures might be employed to hasten his arrival. He might be beaten with quirts, his lodge and lodge-poles destroyed, and even his horses killed.

The reason for this enforced attendance is obvious enough. Absence from the ceremony was believed to bring misfortune, and misfortune to an individual, or to a number of individuals, might well enough extend from them to other members of the tribe. Therefore, in the belief of all the people it was essential that everyone should be present to share in the blessed influence of the occasion and in the protection from evil which this influence would bring.

I have no record of any family or group of Cheyenne refusing to attend this ceremony, though it is stated that on one or two occasions the messengers have been unable to find some little camp at a distance from the principal village. I know of no case like that instanced in an earlier paper on the Cheyenne, where Big Ribs, a famous warrior—whose name is always coupled with that of Old Little Wolf, as the two bravest men ever known among the Cheyenne—resisted and drove away a group of soldiers sent to his camp to bring him to the ceremony of renewing the medicine arrows.¹

Because of the presence of these favorable spirits at the ceremony, and their beneficent influence, all the food brought into the Medicine Lodge and allowed to remain there for a brief period is sanctified. Having passed through this sacred place, it is all—or almost all—taken out again and eaten by the people, not as food merely, but also for the spiritual benefit received by eating it. This belief is so firmly held that an effort is made to have everyone in the camp, from the youngest to the oldest, share in these benefits by eating of the food. A relative, for example, will take a tiny morsel of such food and will place it in the mouth of a babe too young to swallow, removing it a moment or two later, but believing that the blessing received by the food while in the Medicine Lodge will be imparted to the infant.

Among the Blackfeet a similar faith and like practice exist.

¹ *American Anthropologist*, N. S., vol. XII, p. 547.

The hundred tongues dried and prepared by the woman who vows the Medicine Lodge in that tribe are partaken of by all the people as a sacred food, the eating of which carries with it a blessing.

The sacred influence of the Medicine Lodge extends through the entire camp and lasts during the whole time of the ceremony. Any spiritual and sacred operations in which prayers are used will be more successful if undertaken or carried on at this time than if undertaken at any other time. As said of the ceremony of renewing the medicine arrows, secret medicines mixed and prepared during the days of the Medicine Lodge will be more potent than those made at other times. The making of shields—a mysterious and secret operation in which spiritual influences played a most important part—was undertaken at this time. The spiritual protective power of shields made at that time was strong. Generally this was a peculiarly favorable time for the performance of any operation in which prayers—the invoking of help from the mysterious powers—were important. In the same way it was a good time to pay vows.

A man out on the warpath and in danger might pledge himself to swing to the pole, or drag skulls, without specifying when he would do this, and in that case the time at which he would pay the vow was for him to determine, or he might vow that he would swing to the sun-dance pole, or would drag skulls during the ceremony of the Medicine Lodge. In the same way a man might pledge himself to make a feast for the horse doctors' society—horsemen—if his horse did not give out in the fight, or might promise to offer other sacrifices if successful in certain undertakings.

If no Medicine Lodge ceremony was held for two or three years after he had made the vow, the man who had promised to undergo the ordeal at the time of the Medicine Lodge postponed the payment of the vow until that ceremony was held. On the other hand, one who had promised that he would swing to the pole usually did so absolutely alone, except for the assistance of one or two men who in the past had themselves suffered in this way and whom he was obliged to ask to teach him how to perform the act in the ritual manner. He was altogether likely to make his sacrifice quietly,

among the hills at a distance from the camp, seeking no notoriety, but rather striving, so far as possible, to keep the matter quiet. He might drag buffalo skulls in the same way. Such individual sacrifices have been offered within two or three years.

Of late years, since the Government interfered with the operations of swinging to the pole or dragging skulls, and since the whole mode of life of the Indians has changed, the common form of public sacrifice in the Medicine Lodge is dancing without food or drink for three or four days, an effort which, among the modern young Indian men, often wholly unaccustomed to exercise, has led to many a physical breakdown. The dancing of old times, while gazing at the sun or the moon, even though very protracted, was more likely to bring on visions and dreams than to cause physical exhaustion.

Formerly, I am told, it was much more common for young men to go out in the hills, have their breasts pierced, and under instruction to walk back and forth for a long time in a limited circle, trying to break away from the pole, than it was for young men to endure this suffering in the Medicine Lodge. Not a few other forms of personal suffering which had no possible relation to any general religious festival were undergone to obtain the favor of the powers. One of these was to starve for a long period; another was to stand all night in water up to the shoulders.

The following detail of the operation of swinging to the pole alone in the hills was given me by *Wih'tokis*, Little White Man, formerly called *Wih'tuls'to*, Bird That Calls (utters a cry).

He was then a young man, and his first child, a little baby, was very sick. In order to save the infant's life he determined to make a sacrifice. While considering what form this sacrifice should take, he saw in dreams persons standing up and swinging to the pole, and when at length he was convinced that this was what he was directed to do, he still hesitated for some time before making up his mind to act. Yet he kept thinking he saw a person swinging to a pole, and even when awake and moving about he used to see this. Finally another dream led him to decide. The person who appeared to him in the dream said to him that if he made this sacrifice his child would recover.

Bird That Calls now summoned two older men to advise him. These were Black Whetstone (*Môhktâ'vêhâtsê'hê*) and Wounded Eye (*Hê'êkâi'ustâhê*). He told them what he had seen, and said that he was obliged to undergo this suffering and that they must teach him how to do it. He offered them the pipe, requesting them to help him, and they accepted it, thus promising their assistance.

The afternoon before the sacrifice was to be made, Black Whetstone and Wounded Eye took Little White Man out to cut the pole to which he was to be tied. When a young cottonwood tree, suitable for a pole, was found, they grasped his arms and caused him to move his hands four times toward the tree, as if cutting it with an axe. Then he cut down the pole without further ceremony.

They now caused him to pick it up from the ground, making four motions before lifting it and then four motions before dragging it away to the place chosen for the sacrifice. When the place was reached, the instructors showed him how to dig the hole in which it was to stand, making four preliminary motions before actually beginning to dig the hole. The pole was not trimmed; the leaves and branches were left on it.

That night after the three had reached camp, a messenger was sent about the camp to find and borrow two braided rawhide riatas. Two were required because he had two instructors. If there had been a single instructor, only one rope would have been needed. Next morning the three men arose very early, and long before daylight each instructor took one of the ropes and rubbed his hands down over its whole length four times. Then a coal was taken from the fire, sweet grass sprinkled on it and each rope was passed four times through the smoke. Then to one end of each rope were tied two deerskin strings, each seven or eight inches long. Each rope was now doubled into a ball in the middle, leaving the end to which the strings were tied—to be attached to the skewers in his body—four or five feet long, and the other end—to be tied to the pole—somewhat longer. The ropes were now put aside, and thereafter no one might touch them except Bird That Calls.

Just before daylight the instructors painted him with white clay

over the whole body. After he had been painted, they caused him to sit, and filled and lighted a pipe, and offered it to him four times, and each time he smoked. The pipe was held to his mouth; he did not touch it with his hands.

After he had smoked, the instructors told him that the direction to perform this sacrifice was the greatest favor that he could have received—the privilege to stand on a hill where all (the powers) might look at him, and to stand by a pole in the sun's road where the sun could look down and see him. It might be a hard trial, but he must not give up. When the sun rose he should look at it until it reached the middle,—the zenith,—and when it passed the middle he should not give up, but should watch it until it disappeared.

After he had received this instruction, he set out with the two older men to go to the place where the pole was. He had expected to walk out there barefoot, but it chanced that among his gifts to his instructors were some moccasins, and for this reason he had the right to wear moccasins in going out. When they set out, he walked in advance, wrapped in a buffalo robe and carrying the two ropes. The instructors followed.

When they reached the place where the pole was, Bird That Calls sat down near the pole and facing it, and the instructors sat behind him and filled a pipe. Before lighting the pipe they pointed it to the four directions and prayed. They smoked and waited before setting up the pole until the sun just began to peep over the hills. While waiting the two instructors tied the two ropes to the pole, each one giving the other a small present to pay him for tying the rope.

The instructors said to him, "You must watch the sun, and before it gets up too high must raise the pole."

When the sun began to rise above the horizon, Bird That Calls planted the pole, while the instructors prayed and asked the sun to look upon this pole. "Whoever it was that directed this man to do this, let him see that now he is doing it. Let this man have good luck, and let all his children be fortunate. We have the tree standing in your gristle rope. It has never been

broken. Let this man live long—until he has crossed the four ridges."

The four ridges alluded to represent four trials—four sacrifices to be made. It is believed that the great power will be pleased with a man who shall perform four important ceremonies. These ceremonies are the ridges referred to. One who desires to obtain special favor from the great power has these four ridges to cross; in other words, he endeavors to perform these four difficult ceremonies during his life. There is no regular order in which the four ridges are to be crossed, nor is it believed that the four ceremonies are always the same ones. A man who has made the Medicine Lodge—passing through all its mysteries—is considered to have crossed one of the four ridges. One who wishes to acquire abundant spiritual power—to qualify as a great medicine-man—may do so by passing one of the ridges each year for four years. The opinion has been expressed that a man who possessed sufficient physical endurance to stand the hardships involved in the tasks, might pass all these ridges in a single summer. The crossing of a ridge, it is believed, does not imply any particular period of time.

The braided gristle (rawhide) ropes spoken of in the prayer were commonly used to swing on by those who paid their vows in this way in the Medicine Lodge. Such ropes were used over and over again by different persons in the payment of such vows. The tree stands within the rope that is tied about it.

South of the pole, and facing southward, was placed a buffalo skull; on each side of the pole, east and west, stood two buffalo chips, each four steps and a half step (12 or 14 feet), from it, and south of each of these chips was another. These chips represented guards, or watchers, to observe the man and see that he did his duty. Buffalo chips were not always available, but if they were not to be had, large stones might be used in place of them. In the arc of a circle south of the pole—the pole being the circle's center—was spread a bed of white sage for him to walk on.

It was now time for him to be pierced. He knelt, sitting back on his heels, and rested his hands on his knees, opposite to and facing the pole. The instructors knelt at his right side and with

charcoal marked upright parallel lines on the skin on the right breast to indicate where the knife should enter and where come out. Then one instructor took the skin in his fingers above the marks and the other below the marks, and pinching up the skin they thrust in the knife at the marked place on the right, and it came through at the marked place on the other side. Before using the knife, it had been rubbed down with a piece of charcoal. The left breast was pierced in the same way, the instructors passing behind the novice, but in this case the knife was thrust into the skin of the left breast from right to left, as it had been on the right side, and not from left to right. This was done because a single knife was used for the two piercings: If two knives had been used, the second might have been inserted from left to right.

When the right breast was pierced, the instructors, assisting each other, passed a small straight stick, the length of a finger, through the slit, and to this skewer tied the strings on one of the ropes. After the left breast was pierced a similar skewer was passed through that slit and tied.

After the strings had been tied, the instructors raised Bird That Calls to his feet and supported and directed him as he walked over to the middle of the sage-covered path. Then the instructors pulled four times on his breast to straighten out the ropes. They moved his body toward the east and then toward the west; again toward the east and again toward the west—four times. Then they took hold of his right leg and moved it four times forward, and at the fourth movement he began to walk to the west end of the sage-covered trail, and from there back to its east end, and back again—going forth and back until the sun had set. It seemed to him to take the sun a long time to reach the middle, but the time from the middle to the sun's setting was much longer. He was constantly trying to break loose, but the skin of his breast did not break; it only stretched. He had the privilege of resting four times—in the middle of the forenoon, at noon, in the middle of the afternoon, and just before sunset. At each of these rests he might smoke a pipe. He rested but once—at midday.

As soon as he had begun to walk, the instructors left him and were

absent all day, intending to return to him just as the sun set. When they left him, they said, "When we return for you at sunset, try to be as near as you can to the place from which we raised you up, but do not sit down until we come to you and push you down."

During the day the instructors built a sweat-house in the camp.

At sundown, when the instructors reached him again, they grasped his arms, one on each side, and pushed him down to a sitting position. They cut through the stretched hide of his breast, took him back to camp, and entered the sweat-lodge with him, some other men who had made this sacrifice also going into it. His wounds and the blood on his body were wiped off with white sage. That night, when he ate, no one might eat with him except men who had experienced this suffering. On each of the three following days he took a sweat, and on the fourth day the ceremony was finished.

He was told that thereafter, if he wished to teach men how to undergo this penance, he might teach four persons and no more.

In taking a ceremonial sweat, the man is thought for the time being to give over his whole body and spirit to the great power. Then when he leaves the sweat-house, and his body has been wiped off with white sage—the male sagebrush (*hêtânēwǎnûts'*)—his body again belongs to himself.

Wlk'isInIs'to gave his instructors a horse, a gun, a suit of deer-skin clothing, moccasins, and blankets. His child got better the next morning.

An explanation of the considerable number of dancers who take part in the sacrifice and go through the labor and starvation at the time of the Medicine Lodge, is found in the feeling of loyalty which exists in the soldier societies. When a member of any soldier society had pledged himself to suffer at the Medicine Lodge, whether as medicine-lodge maker, or merely as a dancer, it became a point of pride with the other members of that soldier society to undertake to carry through a similar sacrifice. They felt that they must not let their brother undergo this suffering alone, and so, out of good will and friendship for him, they undertook to do as he was doing.

That the so-called torture is no part of the ceremony of the Medicine Lodge I have long known. Recently, in order to confirm

this knowledge, I made specific inquiry on the point of certain priests—men who themselves have made the medicine lodge and who time and again have acted as priests in the Medicine Lodge ceremony. I asked them to tell me definitely whether the torture—the dancing for a long period, the swinging to the pole, or the dragging of skulls—were parts of the Medicine Lodge ceremony. They seemed astonished at the question and rather disposed to think I was joking with them and to laugh at the inquiry; but when I explained my reasons for asking it, each man earnestly and positively declared that the torture had no relation whatever to the ceremony.

These forms of suffering have appealed to the imagination of people who have witnessed them, and the result has been that in the popular view the actual ceremony of the Medicine Lodge and its purpose have been very largely overlooked, while the spectacular performances of the so-called torture have been enlarged on.

The use of sacred bundles, the erection of the sun pole, the building of an altar, some sacrifices, and certain other more or less secret ceremonies are parts of the ritual of the Medicine Lodge, as they are of certain other ceremonies. Torture is no part of it and has no relation to it in any tribes with which I am familiar.

The Medicine Lodge seems only a form of the Summer Dance common to many Indian tribes, and is directly connected with the food supply—an abundance of animals, a liberal yield of natural fruits and roots, and of crops cultivated. These festivals are direct prayers for sustenance—petitions that the earth will continue to bring forth food for man and for the beasts on which man depends for food.

238 EAST FIFTEENTH STREET
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TEN DAYS WITH DR HENRI MARTIN AT LA QUINA

By CHARLES PEABODY

FROM September 17 to September 28, 1913, it was the writer's good fortune to be the guest of Dr Henri Martin at his country place near the Mousterian station of La Quina.

Geographically and topographically the site may be thus described: It is about three kilometers northeast of Villebois-Lavalette, itself a cheerful little village on a secondary railway, about 30 kilometers southeast of Angoulême; its latitude is about $45^{\circ} 30' N.$, and its longitude $0^{\circ} 20' E.$ from Greenwich. The department is Charente, midway between the famous Dordogne to the southeast and the ocean to the west. The altitude is but few meters above the sea, while the banks of the Voultron, on which La Quina is, rise from 20 to 60 meters more; farther away are heights of 180 or 190 meters. A limestone country, the valleys are likely to be long and bounded by the precipitous eroded cliffs ready prepared by nature for the protection of prehistoric man. The heights themselves are ridges, but not monotonous; the relief is much like that of the Ozark region of our country, without the great extent of plateau characteristic of the latter. The country is fertile, though the highlands have been largely denuded; nut-trees of various kinds and glorious poplars made a late September a revel of color and form.

The climate is warm for the latitude, temperate in winter and tempered by the sea in summer. The prevailing west winds carry in some moisture, but the sea as a whole does not modify the sensible temperature as much as one would expect. Health is the rule, and its concomitants, independence and good nature. The most important industry is the making of brandy, Cognac, the center of the industry, being in Charente, only a few kilometers to the west.

In prehistoric archeology, especially of the paleolithic period, Charente is rich. Overshadowed by the amazing plethora of

Mousterian, Aurignacian, Solutrian, and Magdalenian from the Dordogne, this department is less well known. The Charente river follows its own independent course to the sea, unconnected with the Vézère-Dordogne system, and the country is lower and seems to contain fewer inhabited rock-shelters.

With the enthusiasm of the Frenchman everywhere for his local archeology, which we should do well to imitate, the Charentais have done much in their section. The work of Favraud and Chauvet should of course be mentioned.

Seven or eight years ago Dr Henri Martin, of Paris, realizing the importance of the rock-shelter at La Quina, bought the station and has wisely kept it from depredation by the unwary and from desecration by the unscientific. For years, summer after summer, he has excavated, almost with Professor Putnam's proverbial tooth-brush, this great shelter 40 or more meters long and eight or nine meters high. Seldom using more than three workmen, and these for the purpose of carting away debris, he picks away at the breccia, aided by Madame Martin and his three enthusiastic children. He uses *piochets* and *crochets* of his own invention, and, when the breccia becomes too hard, sends son Bernhard to the Voultron for a pail of water to soften the indurated conglomerate by an ordinary squirt.

The early mornings Dr Martin spends in his delightful laboratory in the picturesque "logis," where he lives. Individual, microscopic, comparative examination, meticulous classification, complete preservation, and generous distribution are his methods. The museums at Phillips Academy, Andover; Harvard University; Yale University; Columbia University; The American Museum of Natural History, New York; The University of Pennsylvania; The Smithsonian Institution, and the University of Chicago bear witness to his liberality. It may be frankly said, without probable indiscretion, that all he asks is scientific care, record, and exhibition. An exchange is always welcome to him, especially in somatological material, in primis, crania. But any responsible institution with a dignified place of exhibition and competent curatorship seems fairly able to procure a series of La Quina specimens. What the Doctor will not do is to sell.

Excavation at La Quina, the richest under-surface station the writer has seen, is a privilege. To his knowledge but one other foreigner has been invited to excavate; this is Baron Blanc, an Italian with a chateau-residence in Chambéry.

The threatened disqualification of foreign excavators has not yet taken place (*absit omen*); Dr Martin, however, advises careful dating of La Quina specimens. All specimens at present in America, so far as knowledge goes, have been received by gift or exchange direct from Dr Martin or, by his own request or authority, from one or two of his intimate friends. Any other should justify their provenance.

La Quina has been published in extenso. This is not the place for a bibliography; it is not necessary. - Reference to the standard earlier and later digests of the de Mortillet, to the first volume of Déchelette's *Manuel*, to the series of articles on the Mousterian of Le Moustier by Boursoulon, and chiefly to the work of Dr Henri Martin himself and comments thereon in *L'Anthropologie*, *Bulletins et Mémoires de l'École d'Anthropologie de Paris*, *La Revue Préhistorique*, *L'Homme Préhistorique*, *Bulletin de la Société Préhistorique Française*, and the *Comptes-Rendus des Congrès Préhistoriques de France*—this will orientate him who wills.

Of course, the local pride of the Charentais leads them to differentiate rather more than is necessary between the industry of one department and that of another; departmental divisions are quite conventional, and changes in types of specimens come gradually rather than by jumps over frontiers. The Mousterian of La Quina is surprisingly homogeneous from the lowest stratum to the highest. From the former a few recollections of the Acheulian have been reported, and suggestions of the Aurignacian from the latter. They are rare—it is strange that only 100 or 200 meters along the Voultron toward the Doctor's "logis" is, in a similar rock-shelter, an Aurignacian station, small, it is true, but altogether different from La Quina.

To an Americanist, accustomed to cultures of enormous geographical extent and striking similarity among themselves, the absolute cultural differences observable in this region within

stone-throws of each other (e. g., Laugerie-Haute and Laugerie-Basse, and a better contrast between La Quina and the Grotte de la Fontaine, 20 kilometers to the north)—this juxtaposed tossing



FIG. 86.



FIG. 87.

together of cultures thousands of years apart is, to repeat, a standing wonder.

According to Bourlon the Mousterian of La Quina corresponds to "Couche 3" at Le Moustier.

In 1912 the Congrès Préhistorique de France was held at Angoulême, under Dr Henri Martin's presidency, for the purpose of studying the station on the ground. Mrs Peabody and the author had the good luck to be present and to stay over a few days and help dig. The results of this redoubled digging, increased by two or three times as many specimens given outright by the Doctor himself, were sent home and were distributed into the charge of the institutions mentioned at Andover, Cambridge, and Washington. The series reserved for Harvard had been prepared by him for the Congrès International d'Anthropologie et d'Archéologie Préhistoriques, which met in October of that year in Rome; he changed his mind and sent the series to the Peabody Museum.¹ These

¹ For a general survey of the site the best reference is to the *Comptes-Rendus* of the Congress at Angoulême, 1912, pp. 282-296.

series were largely picked specimens of the type to make museum men glad. The series sent home in 1913 is just as the fortune of the pick got them out—dirt, breccia, and all. They were washed and studied here, and for that reason have alone been used for the few necessary statistics before the conclusion of this paper.



FIG. 88.



FIG. 89.



FIG. 90.

Much to the delight of his guest and the curiosity of the Martin household, a new trench was opened in the same rock-shelter about 30 meters from the work of former years. This was in the middle of September, 1913, and the writer had virgin soil. Strangely enough the whole shelter faces somewhat north of west—pleasant for the excavators but unpropitious for the Mousterians. Not knowing what horizontal stratum the new cut would correspond to, he called this one "gamma," and the vertical "M" in line with the earlier. The collection at the site thus comes almost equally from the two positions, "M. Gamma," and "C 2," a former position that seems of inexhaustible richness.

There follow a few of the inevitable tabulations with comments.

The typical "pointes Moustériennes" as well as the "racloirs" are comparatively small. Large specimens have been found at La Quina, but they are rare.

Many of these smaller implements are of excellent workmanship.

When the chipped face is uppermost and the sharpest angle points to the cartographic north, the scraping edges are as shown in the table.

Peabody Museum La Quina Collection, 1913

	Cs.	M. GAMMA.
Pointes Moustériennes.....	9	12
Pointes Moustériennes with double patination.....		1
Pointes Moustériennes with concavity.....	2	
Racloirs.....	35	50
Racloirs with concavity.....	3	6
Racloirs with suggestions of manufacture.....	2	
Racloirs with double patination.....	4	1
Racloir-couteau.....	1	
Grattoir.....	1	6
Grattoir with suggestions of manufacture.....	1	
Racloir-grattoir.....	1	
Knives.....	4	3
Nuclei.....	6	11
Chips with partly original surfaces.....	92	74
Chips with no original surface.....	80	118
Quartz specimens.....	12	37
Fossils.....	2	
TOTAL.....	255	319

Size of the Major Specimens at La Quina¹

		Cs.	M. GAMMA.
Pointes Moustériennes	Large: 8 cm. + long.....	1	0
	Small; less than 8 cm. long...	8	12
	Total.....	9	12
Racloirs	Long; 10 cm. + long.....	0	1
	Medium; more than 7 cm. and less than 10 cm. long.....	5	16
	Short; less than 7 cm. long...	30	33
	Total.....	35	50

Position of the Scraping Edges

		Cs.	M. GAMMA.
Pointes Moustériennes	Scraping edge on right.....	6	3
	Scraping edge on left.....	1	2
	With two scraping edges.....	2	7
	Total.....	9	12
Racloirs	Scraping edge to right.....	8	15
	Scraping edge to left.....	9	12
	With two scraping edges.....	2	9
	Undetermined.....	16	14
	Total.....	35	50

¹ The "pointes" and "racloirs" of the simple type are alone included here.

By the preceding tables M. Gamma seems to have rather a better showing than the older C 2.

Of specimens in flint, C 2 provided 72 against 172 chips, or 30% against 70%. Of specimens in flint, M. Gamma provided 90 against



FIG. 91.

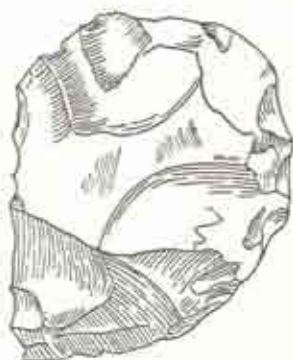


FIG. 92.

192 chips, or 32% against 68%. The proportion is, however, surprisingly like, and still more goes to show the exceeding richness of the station.

In "pointes Moustériennes" the two trenches are nearly even; the relative proportion of this much sought specimen is not high.

From long experience, when a "pointe" or "racloir" is placed point upward, one is accustomed to think of the principal scraping edge as being on the right. The tables show a slight preponderance, but not enough to theorize about, let alone to put forth any idea as to right- or left-handedness or ambidexterity.

It goes without saying that the retouched scraping edge is on the face other than that carrying the bulb of percussion; this, however, is not universal. When the "lower" face is looked at, there is a tendency for the bulb of percussion to be at or near one rather than under the scraping edge (as of course it should not be), or opposite the scraping edge (as it would seem it should be).

There are several interesting specimens of "pointes" and "racloirs"; not a few "racloirs dégagées" with one end turned up, and "hashers," more or less semilunar in shape, which purposely or otherwise often carry much of the original limestone crust (for easy grasping).

It is not necessary to take quite seriously all the discussion as to hafting of the flints from Chelles to La Madeleine inclusive. All the ethnological parallels available do not furnish proof that one paleolithic implement was hafted; all the contrary evidence in the world will not convince one who has studied the specimens "with concavity," i. e. with a hollow, with or without a distinct stop-ridge forward of the hollow, that the implements were not hafted. It does not look like accident or selection; it appears like "preconceived form"; it may be any one or all three.



FIG. 93.



FIG. 94.

The nuclei are interesting for a Mousterian station; some challenge Grand Pressigny. From "C. 2" are two big ones, 60 and 55 cm. high respectively, and four small ones suitable for sling-stones(?). These have 6, 9, 9, and 7 faces in order besides the base; one face may be natural. "M. Gamma" produced nine of ordinary type, a sling-stone with nine faces, and a high carinated specimen with secondary chipping on the front; this looks like the beginning of the succeeding epoch.

The patination of specimens is interesting. The phenomenon of double patination is not rare, and is of especial interest and original research to the Doctor himself.

In America (especially among the late Dr Winchell's specimens) and in England (among Dr Sturge's Mildenhall flints) double patination occurs again and again.

The alteration of surface often goes very deep or quite through the specimen.

It occurred to the writer that an examination of the specific gravity of a series of specimens ranging from unaltered flint to the most changed would show graphically the effect of exposure. The work was done by Mr W. G. Foye under the kind direction of Professor Charles Palache of Harvard University.

Specific Gravity of Specimens

	SPECIFIC GRAVITY.	FIG.	SIZE.	MUSEUM No.
Nucleus dark, unpatinated, lustrous...	2.535	86	1 : 1	E. 604
Long "racloir," unpatinated, lustrous...	2.542	87	1 : 1	E. 544
Triangular "racloir," much patinated...	2.285	88	1 : 1	E. 580
Small knife; partly altered.....	2.260	89, 90	1 : 1	E. 766
Flat flake, altered yellow patina.....	2.225	91	1 : 1	E. 595
Doubly chipped fragment, yellow patina	2.225	92, 93	1 : 1	E. 601
Thick chip, white, much altered.....	1.692	94	1 : 1	E. 564

This table is striking enough and tells its own story. Until however, more is known of the causes and processes of patination and what may be called "*cachalonnement*" of flint, it is quite useless to draw conclusions as to great duration of exposures.

The crowning glory of La Quina is the quantity of animal bones, showing traces of flint tools, that are there found.

The table that follows gives some idea of the result of excavation.

Specimens in Bone, Horn, Antler, etc.

C.		M. GAMMA.	
SCRATCHED		SCRATCHED	
Identifiable.....	5	Identifiable.....	6
Not identifiable.....	67	Not identifiable.....	86
Total.....	72	Total.....	92
NOT SCRATCHED		NOT SCRATCHED	
Identifiable.....	56	Identifiable.....	21
Not identifiable.....	281	Not identifiable.....	235
Total.....	337	Total.....	256
PERCENTAGE OF 409		PERCENTAGE OF 348	
Identifiable, scratched.....	.012	Identifiable, scratched.....	.017
Not identifiable, scratched..	.164	Not identifiable, scratched..	.247
Identifiable, not scratched..	.137	Identifiable, not scratched..	.061
Not identifiable, not scratched	.687	Not identifiable, not scratched	.675
Total.....	1.000	Total.....	1.000

Dr Henri Martin's warning to save all the fragments, as from one-quarter to one-half carried human markings, was somewhat sceptically received, and it was not until after careful washing and examination through a glass that his words became justified.



FIG. 95.



FIG. 96.



FIG. 97.

In the table every specimen that did not seem surely flint-marked was thrown out of the "scratched" list, yet from M. Gamma there is a proportion of .264. These markings are not at all due to drying and splitting of the bones, nor to gnawing; their localization and parallelism, even if the individual scratches could not determine the point, are conclusive.

Besides the horse and bison phalanges and humeri the small fragments carry a great many marks.

The discussion as to the way these came to be is all more or less convincing. Ordinary cutting and scraping to get off meat and skin will not account for many localized phenomena; disarticulation and more vigorous use of the bones subjectively or objectively must be invoked.¹

¹ See figures 95, 96, and 97. The identifications were kindly made by Dr Glover M. Allen of Harvard University.

Most of the bones found during the visit can be referred, if identifiable at all, to the bison, ox, horse, fallow deer, and reindeer.

Great numbers of teeth of various animals were found; they resist decay.

It is not to be forgotten that a superb fragment of mammoth tusk lay in situ at the time of the Angoulême Congress.

No human bones were found during the ten days.

There is further study to be done and problems of importance to be worked out. A little piece of manganese found at the time with scratches suggests paint and color; the suggestion is all that is needed for one who has in mind the "*rapprochements avec l'Aurignacien*."

The whole of the reason for the bone markings is not known. The quartz specimens, of which there are a fair number, deserve study in connection with similar specimens from the Columbian gravel at Trenton.

The human remains found at La Quina are still *sub lite* and daily prayers for more are offered to complete the testimony.

A field of fair chance, charming hospitality, and lovely nature is La Quina.

Among his generous gifts, Dr Henri Martin included a maquette of the La Quina skull in situ and a reconstruction of the head. Dr E. A. Hooton of Harvard University has kindly consented to add his comments on the latter.

PEABODY MUSEUM, HARVARD UNIVERSITY
CAMBRIDGE, MASSACHUSETTS

NOTE ON THE LA QUINA SKULL

DR HENRI MARTIN has proceeded along right lines in his reconstruction of the Neanderthaloid type on the La Quina skull in so far as he has used a cast of the skull upon which to build up the soft parts of the head. The result of his labors is most interesting, but to me not altogether satisfactory.

In the first place Dr Martin has not given the specimen a sufficiently powerful musculature. It is inconceivable that the massive La Quina mandible should have been associated with such an attenuated temporal muscle. Even if the area of attachment on the skull was not extensive,

the muscle must have been very thick—thick enough to fill out the temporal fossa and to mask the projection of the zygomæ which is so marked in Dr Martin's finished reconstruction. A similar criticism applies to the restoration of the muscles attached to the occiput. The immense occipital torus afforded attachment for short powerful muscles; not for the long slender muscles indicated in the bust modeled by Dr Martin. In general the neck is much too long and slim.

In his reconstruction of the soft parts of the face Dr Martin states that he has been inspired by observations of the facial characters of the chimpanzee. Since I believe that the Neanderthaloid type, in spite of its many simian characters, was an essentially human type, I cannot admit the legitimacy of this method of restoration. Dr Martin has given his La Quina specimen the face of an anthropoid ape. Neither the fragmentary remains of the facial skeleton of the La Quina skull nor the fairly extensive comparative material in other Neanderthaloid crania justify such a reconstruction.

I nevertheless feel that science is deeply indebted to Dr Martin for his conscientious and painstaking work on the osseous remains of the La Quina Man, which has resulted in the addition of another invaluable specimen of the Neanderthaloid type to supplement our knowledge of this most interesting fossil race.

E. A. HOOTON

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TEWA KINSHIP TERMS FROM THE PUEBLO OF HANO, ARIZONA

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INTRODUCTION

THE information presented in this paper was obtained during a visit to the Tewa village of Hano on the First Mesa of the Moqui reservation, Arizona, in January, February, March, and April, 1913. The visit was made at the expense of the Research Fund of Somerville College and of the Ewart Trust, and was facilitated by the generous help and advice of the Director and staff of the School of American Archaeology, and particularly of Mr J. P. Harrington. I have also to thank Mr Drummond, U. S. Indian Superintendent at Polacca, for practical help and kindness, and Miss Rodger, field-matron at Polacca, for valuable information and help of many kinds.

The results of the visit are to be published elsewhere, probably in England, but it is thought that a preliminary note on the kinship terms may be of present interest. These terms were recorded and tested, not only by direct inquiry through interpreters, but also by daily vernacular use of them in familiar intercourse during nearly four months.

CLANSHIP

The most important and most self-conscious social units at Hano are the clans. Clanship is reckoned by maternal descent; marriage is matrilocal; the clans (and groups of linked clans) are exogamous.

Tewa kinship terms belong to a clan system.¹ At Hano, where

¹ See W. H. R. Rivers, *Kinship and Social Organisation*, London, 1914, pp. 71, 82. Dr Rivers proposes a threefold division into "clan", "kindred" (based on the patriarchal undivided household), and "family" (father-mother-and-child household) systems of kinship, in place of the twofold division into "classificatory" and "descriptive". On the impropriety of the latter terms see also A. L. Kroeber in *Journ. Roy. Anthr. Inst. Gt. Brit.*, 1900, XXXIX, p. 77.

the matrilinear clan system is in full force, the Tewa kinship terms express the facts of social life and are used consistently; in the Tewa pueblos of New Mexico, where clanship is now reckoned almost entirely by paternal descent and the clans have lost their importance, while the father-mother-and-child family has become the primary unit of social life, the same kinship terms are used inconsistently, with many local variations, and "descriptive" compound terms are being introduced to remedy the confusion.¹

WORDS APPLIED TO CLANSFOLK

lowa: *naḃi* (*na'jmbi*) *lowa*, "my (our) people": see *lowa* below.

matu: chiefly used in 2 + plural; *naḃi* (*na'jmbi matu'*), "my (our) clans-people", applied to fellow-clanspeople who are not housemates with the speaker; *naḃi matu' in di mu*, "*Naḃi matu* (i. e. N's household) are our clansfolk". The Bear clan at Hano would speak of the Bear clan at Oraibi as *na'jmbi matu'*.

WORDS USED IN CONNECTION WITH KINSHIP

lowa, "people". (1) Company as opposed to solitude; *lowa we di' xḃi*, "in the absence of the people," or, "there being no inhabitants". (2) Human beings as distinct from things and other animals; *lowa p'o*, human hair. (3) Indians as distinct from white people; Pueblo Indians as distinct from other tribes; Tewa Indians as distinct from their neighbors the Hopi of Walpi and Sichomovi; thus, *lowa sa*, Indian tobacco; *lowa di p'ntaḃi'i*, *saḃe di fūḃ*, "Pueblo Indians are stout-hearted, Navaho are lazy". (4) Corresponding to the English "clan"; *naḃi lowa 'o' muḃ*, "my people now thou art", said to a person adopted into the speaker's clan; *ke lowa 'jmbi sa'i 'o mu*, "I am the Bear people's daughter-in-law", said by a woman whose husband is of the Bear clan; *'jmbi pi lowa*, "their own relations". (5) *naḃi lowa*, "my husband", and (doubtful use) "my wife".

kema. Friend, male or female; guest-friend in another village or tribe; *naḃi kema 'o' mu*, "my paramour", 2 + plural *kema'*.

pu'a, puwa. Partner, intimate friend, chum. *da puwa mu*, "they are a pair of friends". 2 + plural *puwa'*, partners, allies (e. g. in a game).

spnisi. Intimate friend, chum.

¹ Such are *paḃijja* for great-grandfather's mother, *taḃaḃ'ḃmḃ* and *ta'ḃuḃaḃa* for paternal uncle. See J. P. Harrington, Tewa Relationship Terms, *American Anthropologist*, n. s. 14, 1912, pp. 472-498.

seŋ, *seŋ*, man, male, married man, husband. *waju seŋ*, male horse. *seŋ* 'pmpm! "thou art a man!" (i. e. bold, strong). *seŋ*, *seŋ*, warrior; *seŋ* *k'awa*, war-song; *seŋ* *wagi*, "like men", boldly. 2 + plural, *seŋnəŋ*, *seŋnəŋ*, "men" in general; "the married men" of a household, kiva, or town.

seŋo, *seŋo*, old man. As a polite substitute for *seŋ*, it is used more freely than the New Mexican Tewa *seŋdo*. *uŋbi seŋo*, my husband. *seŋo'e*, a little old man. *seŋo* *ŋə*², "old man whiteness", aged man. 2 + plural, *seŋa* and *seŋo*; *seŋo* *ŋə*² *puwa'e* 'i *wowa jidi*, "ye shall live to go about as old men."

Both *seŋ* and *seŋo* are compounded to form personal names; 'u'uda *seŋ*, "tobacco man", *daŋseŋo*, "grass man", *seŋo* *mole*, "ball man" (a nickname).

kwi (New Mexican Tewa female, adult woman, married woman) is obsolete and replaced by:

kwiŋo, woman, adult woman, married woman, "lady", wife, female. *wak'a kwiŋo*, (female) cow. *kwiŋo* *ŋə*², "woman whiteness", aged woman; *kwiŋo* *kele*, "strong married-woman", young married woman. 2 + plural *kwiŋo*; "women" in general, *kwiŋo* *we* *ŋi* *pɪn'əŋ*, "women do not think", and "the women", of a town, etc. *kwiŋo* is compounded to form personal names; *pu kwiŋo*, "rabbit lady".

'*g'a*²*jy* (N. M. Tewa 'a'a²*ju*), adolescent girl, unmarried girl (opposed to *kwiŋo*). '*g'a*²*jy* *sojo* *nə* *puwa mən*, "she is getting to be a big girl". 2 + plural '*g'a*²*jy*, "girls", "the girls". *wak'a* '*g'a*²*jy*, heifer. Sometimes denotes "virgin": but, *uŋbi kema* '*g'a*²*jy*, "my girl friend", my paramour; *wəŋfəbē* '*g'a*²*jyuna* 'i *pišə* *piwe* *ma'i* *podī*, "Navaho girls, ye grow weary without your mates." Compounded to form personal names; *podī* '*g'a*²*jy*, "flower-girl".

'*e*²*nu*, adolescent boy, unmarried man, 2 + plural '*e*²*ny*, "boys", "the boys". Of a new-born child one inquires, 'a '*g'a*²*jy*, 'a '*e*²*nu*? "whether a girl or a boy?" '*e*²*nu* *sese'e*, "tiny baby boy".

'*g'a*²*jukele* (N. M. Tewa 'a'a²*juke*), young girl.

'*e*²*nukele* (N. M. Tewa 'e'e²*nake*), young boy. May be added to personal names, in apposition; *pəni* '*e*²*nukele*! "Peni, what a boy you are!" '*e*²*nukele*², a little young boy.

'*e*, child. 2 + plurals '*e*²*j* (N. M. Tewa 'e²*ə* and '*e*). Idiomatic plural: '*e*²*j* '*pm* *məŋi*, "when thou wast a child"; '*e*²*j* '*y* *wi* *po*, "thou art becoming young again"; '*i*²*bi* '*e*²*j* *khəwə*, "her baby-name" (nickname acquired in childhood).

'*e* is postfixed, to form diminutives, (1) to ordinary nouns; *kəŋe'e*,

little house, *musa'e*, little cat or kitten; (2) to nine of the kinship terms (*mam̃e*, *papa*, *p'eṣ'e*, *saja*, *l'ele*, *tuṣu'ne*, *ka'o*, *ka'je*, *kuku*) to form reciprocal terms, as, *ngbi saja*, my mother's mother, *ngbi saja'e*, my daughter's child (woman speaking).¹

KINSHIP TERMS

In direct address, kinship terms are usually but not always prefaced by *ngbi*, "my", or *ng'imbi*, "our". Thus: *ng tidi*, *ngbi 'el* "shut it, my child!" *ngbi tije*, *'agu dṣṣ'awo'a pa*, "my younger sister, pray cook for me!" A man who is smoking with his father's clansman says, *ngbi tada!* "my father!" to which the other replies, *ngbi 'el* "my child!" But also: *'otsu'abe sajal* "come in, grandmother!"; *mam̃e'jl* "mother's brethren!" (as a greeting, e. g. to fellow-tribesmen).

jija. Mother; wife of speaker's father; wife of any man whom the speaker calls *tada*, e. g. wife of the speaker's father's brother. If a sick child is "given" by its parents to another woman "to make it live", the child calls the woman *ngbi jija*. An orphan child calls the female relative who takes care of it *ngbi jija*. A stranger living in a household and treated as one of the family, having no real relations in the place, may call the lady of the house *jija*. A man may call his wife's mother or his wife's mother's sister *jija* instead of *jakwijo*. The wife of a chief is sometimes said to be the mother, *jija*, of all the people.

2 + plural, *jija'i*.

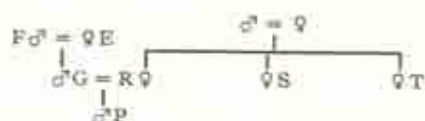
Reciprocal term: *ngbi 'e*.

'e. Child (son or daughter), irrespective of age. See also under *tada*, p. 278.

saja. Mother's mother; mother's mother's sister; any woman whom the speaker's mother's mother calls *kaka* or *tije*. Any female ancestor of the speaker's clan, however distant in time. The senior lady of a clan or clan-household, who, if she has grandchildren, may be called *saja* by her sons and daughters and even by her brothers. Thus: "*kelowa* have no *saja*, they are all rather young ladies, nearly the same age". The senior lady of the clan or group of clans in another village or tribe corresponding to the speaker's own clan or group of clans; thus, to a member of the Hano Corn clan, *ng'imbi k'oso'on saja*, "our Hopi mother's mother", means the senior lady of the Corn clan at Walpi, and *ng'imbi sabḏ saja*, "our Navaho mother's mother" means the

¹ See J. P. Harrington, op. cit., and E. Sapir, A Note on Reciprocal Terms of Relationship in America, *American Anthropologist*, n. s. 15, 1913, pp. 132-138. See also the present writer's "A Note on Kinship Terms Compounded with the Postfix 'e' in the Hano Dialect of Tewa," to be published in Vol. 16, No. 4, of this journal.

senior lady of a group of the Navaho Corn clan living in the neighborhood. An old woman, apart from relationship to the speaker; thus (of a Navaho house) *wi sajamo na kwo*, "there is only one old woman inside": *'o maju po, saja'o' 'o podi*, "I get tired, having already become an old woman". In folk-tales, the resourceful old woman who is called in to help the men with her magic is "a *saja*". The *'e wplā*, the subjects of many comic-heroic tales, live alone with their *saja*. Perhaps as a complimentary term, *saja* is sometimes substituted for other relationship terms. Thus A and B, the late senior ladies of the two branches of the Corn clan, were conventionally described as "sisters"; their respective daughters C and D are also called "sisters". Naturally C speaks to her own daughters (E, F) of "your *saja* B", on the principle that one's *saja*'s sister is also one's *saja*; but logically, D's daughters (G, H) and granddaughters (J, K) should address C as *ka'je* or *ko'o*, whereas in fact G and H often call C *saja*; and J and K call C *saja* and *papa* and *ka'je* indifferently. The father's mother is sometimes called *saja* instead of *kuku*. In one case a boy's *ki'u* who named him was spoken of as his *saja*, not *kuku*; in another case an unrelated woman called in to name a boy was sometimes called by him *saja* instead of *kuku*. One girl supposed that her mother's father's mother would be her *saja*; strictly speaking, she would be her *'ele kwijo*. A man calls his wife's *saja* and his wife's *kuku* alike "*na'imbī saja*". The women of a clan may call their *sājīngi*'s mother "*saja*"; the relationship seems to be reckoned through the children whose *kuku* or *saja* she is. Thus (in the annexed diagram) S, T, and all the other women of P's clan have to call E "*saja*".



2 + plural *saja'j*. The female ancestors of the clan collectively are *na'imbī saja'j*, "our mother's mothers."

Reciprocal term: *na'bi saja'e*.

papa. Mother's mother's mother; mother's mother's father; mother's father's father; (rarely) mother's mother's brother; father's father's mother. The daughter of the speaker's mother's mother's mother's sister or *ko'o* may be called indifferently *saja*, *ka'je*, or *papa*.

2 + plural *papa'j*.

Reciprocal term: *na'bi papa'e*. (See *p'efe*).

There is probably no proper term for any generation prior to the speaker's *papa*, all earlier generations of his own clan being *saja'* or *mam̄'*, and earlier generations of the clans related to him by marriage not being interesting. But one man professed to recognize the New Mexican Tewa *papajija* for the mother of one's *papa*.

mam̄ (New Mexican Tewa *m̄m̄*, for uses see Harrington, *op. cit.*). Mother's brother; mother's sister's son senior to the speaker; elder clansman. 2 + plural *mam̄'*. Reciprocal term *mam̄'e*, sister's child; mother's sister's child junior to the speaker; junior clansman (man speaking): 2 + plural *mam̄'e*. *mam̄* is applied by males and females to males only, *mam̄'e* is applied by males only to males and females. All the men of the speaker's clan who are not the speaker's own brothers, to the remotest antiquity, must be the speaker's *mam̄'* if senior to him, or if junior to him his *mam̄'e*. (But see *p'ep̄* below.) Thus an historical or legendary character will be identified by saying, "he was N's *mam̄*", that is, he was a man of the B — clan, to which N belongs. A man of a clan or group of clans in another village or tribe corresponding to the speaker's clan or group of clans must be the speaker's *mam̄* or *mam̄'e*, and, for reasons of politeness, he is generally called *mam̄* unless he is obviously very much younger than the speaker. Thus a Hopi man of the Rabbit clan at Oraibi or Moencopi, or a man of the Navaho Tobacco clan is addressed as *mam̄* by men, women, and children of the Tewa Tobacco clan at Hano. (Similarly, a woman of either of those clans would be called *ka'je*, and an old woman *saja*, by men, women, and children of the Tewa Tobacco clan; a young girl would be called *ka'je'e* or *ko'o'e* by the women, *mam̄'e* by the men.) A Tewa man arriving from the Tewa pueblos in New Mexico is greeted as *mam̄* by any Tewa person of Hano before his clanship has been ascertained, and his people at home are inquired for collectively as *mam̄'*; *mam̄'* *ʔn dihi 'o?* "what are our uncles (i. e. the Tewa in New Mexico) doing?" Thus *mam̄* is equivalent to "elder clansman" and also to "elder tribesman". The son of the speaker's mother's half-sister may be called *mam̄*, although he is not a fellow-clansman. (See p. 277 below). A man may speak of his wife's *mam̄* as "*n̄'imb̄i mam̄*", "our mother's brother", by courtesy, but the response will be not *mam̄'e* but *s̄ij̄nḡi*, "bridegroom". A man who is in company with his children will say, on meeting a man of his wife's clan, "here comes *n̄'imb̄i mam̄*", merely for the sake of the children's manners.

p'ep̄'e. Mother's mother's brother. If it is desired to distinguish

between generations, the mother's-brother's mother's-brother may be distinguished from the mother's brother and earlier generations (*məm̥m̥*, *məm̥m̥j*) as *p'ep'e*. Similarly a man of the clan corresponding to the speaker's clan in another village or tribe may be called *na'jmbi p'ep'e* if he is obviously much older than the speaker.

2 + plural *p'ep'ej*.

p'ep'e is said to be "the same as *papa*", and the reciprocal terms are *papa'e*, *p'ep'e'e*, and *pe'e'e* (obsolescent).

ko'o. Mother's sister; mother's sister's daughter senior to speaker; mother's mother's sister's daughter's daughter senior to speaker; etc.

2 + plural *ko'o'j*.

Reciprocal terms *ko'o'e* and *kowe'e*.

If the persons concerned are of different generations, the senior by generation is *ko'o* and the junior *ko'o'e*; if they are of the same generation, it is doubtful whether the terms depend on the age of the individuals or the seniority of their mothers. Thus my sister's daughter (woman speaking) is undoubtedly my *ko'o'o*, but my mother's sister's daughter may be my *ko'o'e* or my *ko'o*.

ka'je seems to be a fairly general term for ladies of the speaker's clan senior to the speaker. Thus, my mother's sister is my *ko'o*, but my mother's elder sister would be preferably called my *ka'je*. My *saja*'s sister is my *ka'je* unless I call her *saja*, and my *saja*'s sister's daughter is my *ka'je*. My mother's mother's mother's sister is my *ka'je* or my *papa*, and her daughter is my *ka'je* or my *saja*. The two female heads of two branches of a clan call each other *ka'je* unless they call each other elder and younger sister. The mother's younger sister may be called *ka'je* if she is elderly and the head of a house. The senior lady of the Hano Corn clan calls the senior lady of the Walpi Corn clan *na'bi ka'je*. *ka'je*, or *ka'je kwijo* is the proper term of address to any woman of the clan corresponding to the speaker's clan in another village, and for a Tewa woman from New Mexico irrespective of clan; *ti ka'je kwijo 'um m̥p̥* = "what, art thou a Tewa woman?" In these extensions it is the feminine equivalent of *məm̥m̥*.

2 + plural *ka'je'j*.

Reciprocal term *ka'je'e*.

'atse'e is an obsolescent term for the oldest lady of a clan, "much the same as *ka'je*". Like *kə'p̥n̥*, it survives in the nomenclature of the imaginary families of katsinas and as a personal name.

p̥ip̥i. Elder brother. 2 + plural *p̥ip̥i'j*.

kaka. Elder sister. 2 + plural *kaka'j*.

kg'qñ. Obsolescent term for elder sister.

tije. Younger brother, younger sister (New Mexican Tewa *tí'u*). 2 + plural *tije'*. *pa'ade*, elder brother, elder sister (New Mexican Tewa *pa'ade*) and *tí'u*, younger brother, younger sister, are obsolete at Hano as kinship terms. *pa'ade* is used in comparisons: '*ibi pa'ade'o mp*, "I am elder than he"; *pa'ade'um mu'i*, "thou wilt go first, or, ahead"; '*ibi pa'ade*, "his predecessor" (in office); *pa'adeko*, early planting. So, from *tije*; *ngbi tilegi* (New Mexican Tewa *tí'uge'i*) *ng'x'x*, "he comes next to me, follows me, overtakes me;" '*ibi tile*, "his successor" in office.

Apart from the question of relative age, brothers in general are *pi'pi*, sisters *tije*; it seems that brothers are assumed to be senior to sisters, and entitled to respect as such, in the absence of evidence to the contrary. '*umbi tije'o mu*, "I am your sister [and yet I will stop your quarrel]". *qa tije m̄* generally means "they are a pair of sisters", *qa pi'pi mu*, "they are a pair of brothers. More fully, *qa pi'pi m̄, qa tije m̄*, "they are elder and younger brother". "They are brothers-and-sisters" is generally expressed by *qa tije m̄*.

The following classes of relatives call each other brothers and sisters: (1) Children of the same mother by the same father or by different fathers. (2) Children, daughter's children, daughter's daughter's children of sisters (but see below). (3) Children of the same (own) father, by the same mother or by different mothers. (4) Persons who call the same clan "father", *tada*; e. g., the children of two brothers, or the children of a *m̄m̄x* and *m̄m̄x'e*; thus *Siki*, a man of the Hopi Sand clan, and *P'oq*, a woman of the Tewa Katsina clan call each other brother and sister because their respective fathers were men of the Tewa Cloud clan. If necessary, own brothers and sisters may be distinguished by such phrases as '*ibi pi pi'pi*, "his own elder brother"; *qa pi'pi mu'i*, *qa tije mu'i*, *wibi'idi qa pi'i*, '*ima q̄q̄ñ jala*, "couples who were elder and younger brother to each other, who issued from the one [mother], the same were fighting."

The nomenclature for the descendants of sisters is somewhat inconsistent and perhaps transitional in character. The mother's sister is never called "my mother" *ngbi jija*, but *ngbi ko'o* or *ngbi kaje*, and a woman never calls her sister's child *ngbi'e* "my child" but *ngbi ko'o'e* or *ngbi ka'je'e*. But on the other hand, a man may call his wife's mother and his wife's mother's sister alike *ngbi jija*; and the mother's-sister's husband, and the husband of a woman whom the mother calls "sister", may be called *tada* "father", instead of *x̄j̄j̄ñgi* "bridegroom"; the sister of the mother's-mother is called (like the mother's-mother her-

self) *saja*, and the sister of the mother's-mother's-mother is called (like the actual mother's-mother's-mother) *pupa*. Two women who are daughters, or granddaughters, or granddaughters (by maternal descent) of a pair of sisters generally address each other as "my elder sister" *ngbi kaka* and "my younger sister" *ngbi lije*, although the junior may also call the senior *ngbi ka'je*, "my mother's sister".

In practice, the children of sisters almost always address each other as brothers and sisters, and are spoken of as such; *ḡi lije mḡ*, "they are geschwister". But my informants, when they discussed relationship terms or explained the precise relationship of individuals for my benefit, gave the following rules: A man calls his mother's sister's son (that is, his *ko'o's* son) *mḡmḡ* if senior to himself, *mḡmḡ'e* if junior. A man calls his mother's sister's daughter (his *ko'o's* daughter) *ko'o* if senior, *mḡmḡ'e* if junior. A woman calls her *ko'o's* son *mḡmḡ* if senior to herself, *ko'o'e* if junior. A woman calls her *ko'o's* daughter *ko'o* if senior to herself, *ko'o'e* if junior. Seniority seems to be reckoned sometimes by the relative ages of the speaker and the person spoken of, sometimes by the relative ages of the parties' mothers. The same usage applies to the grandchildren or great-grandchildren (in maternal line) of a pair of sisters. It also applies to the children of half-sisters: thus, A and B had the same father, but their mothers were of different clans, A having been born of a first marriage and B of a second: A and B were, of course, of different clans; B's children call A's son *mḡmḡ*. In this exceptional and interesting case a term normally limited to the speaker's own fellow clansmen (real and fictitious) is applied on purely genealogical grounds to a member of another clan. *tada* (New Mexican Tewa *tasa* and *tatâ*) father; mother's husband; father's brother; father's clansman. 2 + plural *tada'j*. If a woman of the Corn clan takes a husband of the Cloud clan, her children call every man and boy of the Cloud clan, in their own village and in other villages, irrespective of age and generation, *tada*. If necessary the speaker's own father may be distinguished as *ngbi pi tada*, "my own father", and a stepfather as *ngbi kwala tada* (New Mexican Tewa *kwataia*). As a rule the general knowledge of genealogical facts prevents ambiguity; thus a woman may remark that she has "only two *tada'j*", meaning that her own father has only two own-brothers, although she calls all the males of her father's clan *ngbi tada'j*. An individual may be distinguished by adding his personal name: *ngbi mḡbi tada Sulu*, "our father Sulu".

The husband of the speaker's *ka'je*, i. e. of the speaker's mother's sister, may be called *tada* instead of *sḡjngi*.

Sick people often "give themselves" to a man "who thinks strong" and thereafter call him *tada*; this may involve joining the *tada*'s ceremony. People on a journey far from home "choose a father" as a sort of vow for their safe return and call him *tada*. A person may have two or more *tada*'s of this kind. Sick children are sometimes "given" to a married couple and taught to call them *tada* and *jija*. A host, patron, or protector in a distant place may be called the *tada* of an individual or even of a whole tribe; thus a white man in Santa Fe who fed famine-refugees from the Hopi villages was described as *k'osé'ón 'imbi tada*, "father of the Hopi". A chief and his wife are the *tada* and *jija* of all the people.

Reciprocal term, 'e. 2 + plural 'ejə (New Mexican Tewa 'e, 'eñə); own child, brother's child, clansman's child (male speaking). All the people are the children, 'ejə, of a chief.

tułm'əŋ (New Mexican Tewa *tułm'əŋ*). 2 + plural *tułm'əŋ*. The father's own brother may be distinguished as *nađi tułm'əŋ*; reciprocal term *nađi tułm'e*; this is said to be obsolescent, *tada* with reciprocal 'e being more usual.

ki'u (New Mexican Tewa *ki'i*). Father's sister; father's sister's daughter; father's mother's sister; father's clanswoman irrespective of age and generation.

2 + plural *ki'u'əŋ*. Reciprocal terms: to a male, *nađi 'e sŋ*, "my man child"; to a female, *nađi 'e kwijo*, "my lady child".¹

kuku. Father's mother (Santa Clara Tewa *kugu*, mother's mother's mother). 2 + plural *kuku'əŋ*. Reciprocal term *ku'e*. Since any clanswoman of the speaker's father who cut the speaker's umbilical cord at birth and conducted the naming ceremony, and even an unrelated woman called in to cut the cord, is called *kuku*, it is possible that the title is attached rather to this function (which normally belongs to the father's mother) than to a particular relationship. The father's mother, like the other *ki'u'əŋ*, generally speaks of the child as *nađi 'e sŋ* or *nađi 'e kwijo*; unless she is addressed as *nađi kuku*, when of course she responds *nađi ku'e*. The *kuku* (whether the father's mother or another woman) is quite often called *saja*. Note, in connection with the Santa Clara Tewa application of *kugu*, that formerly at Hano the mother's mother and the child's own clanswomen used to cut the cord and give the name.

¹ The 2 + plural of 'e, child, is 'ejə, but the plural of *l'el'e'e* is *l'el'e'e* and so with the other diminutives. The 2 + plurals of 'e sŋ and 'e kwijo are said to be 'e sŋ'əŋ and 'e kwijo'əŋ, but 'e sŋ and 'e kwijo are more commonly heard; *'imbi 'e sŋ'ije 4i' motwatsigi kwihwa 'əŋ*, "they are hanging corn-meal dumplings on their clansmen's sons".

t'ele (New Mexican Tewa *t'ete*, mother's father, father's father).

Mother's father; mother's mother's husband; mother's father's brother; mother's father's clansman irrespective of age and generation, in the speaker's own village or elsewhere. An elderly stepfather may be called *t'ele*, probably because the speaker's children call him so. The use of *t'ele* is widely extended; the father's father, father's father's brother, father's sister's or clanswoman's husband, father's father's father, father's mother's father, mother's father's father, husband's sister's husband, husband's mother's father and father's father, wife's mother's father and father's father, are all called *t'ete*, but not their clansmen collectively.

2 + plural *t'ele'j*.

Reciprocal term *t'ete'e*.

t'ele kwijo, "grandfather lady". Mother's father's mother, mother's father's sister; woman of mother's father's clan irrespective of age and generation, in the speaker's own village and elsewhere.

2 + plurals *t'ele kwijo'j* and *t'ele kwijo*.

Reciprocal term *t'ele'e*.

To illustrate the application of relationship names to clans, suppose that A, a Tewa Corn clan woman, married a Tewa Bear clan man and had a daughter B. B married a Tewa Cloud clan man and has a daughter C and a son D. C and D call all males of the Tewa Bear clan, Stick clan, and White-fir clan, the Hopi Bear clan, Bearskin-rope clan and Spider clan, and the Navaho Bear clan, including infants, *t'ele*, and all females of those clans *t'ele kwijo*; and all the males and females of those clans call C and D *t'ele'e*. C and D call all the males of the Tewa Cloud clan and the Hopi Cloud clan, Water clan and Reed clan *tada* and all the females *ki'u*; the males of those clans claim C and D as "their children" by calling them *'e*, and the females by calling C *'e kwijo* and D *'e sqn*. (Observe that these junior-to-senior terms are applied to whole clans collectively, but the senior-to-junior terms only to relationships which are genealogically demonstrable; a man of the Bear clan does not apply *t'ele'e* to all Corn clan men and women, but only to those who call the Bear clan *t'ele* because their own mother's mother married a Bear clan man.) C and D give the title of *jija*, "mother", to the wife of any of their *tada'j*, and of "brother" or "sister" to any person whose father, like their own father, is a man of the Cloud clan; but they have no names for the wives and children of their *t'ele'j*, the Bear clan men, as such.

sqn. Husband (New Mexican Tewa *sqn*, husband, obsolescent). The

wife calls the husband *ngbi sɛŋ*, "my mate"; *ngbi piŋŋ*, "my own mate"; *ngbi sɛŋ*, "my man"; *ngbi sɛno*, "my old man"; and *ngbi lowa*, "my people". The husband calls the wife *ngbi sɛŋ*, *ngbi piŋŋ*, *ngbi kwijo*, "my lady" (see p. 271), *ngbi ja'a* (obsolete), *ngbi ha'* (obsolete), and *ngbi iawa* (doubtful use).

sɛjɛŋgi or *sɛjɛŋgi* (New Mexican Tewa *sɛjɛŋgi*). Bridegroom; daughter's husband, sister's husband, etc.; applied by both males and females to the husband of any woman of the speaker's clan except the speaker's own mother and mother's-mother (see *tada* and *t'ade*). A man expresses his relation to his wife's clan as a whole by saying '*ɪmɪ sɛjɛŋgi* 'o my, "I am their bridegroom". A man calls his daughter's husband *ngbi sɛjɛŋgi*, and a woman may call the husband of her 'e *kwijo* "ng'ɪmɪ sɛjɛŋgi". It seems that the bridegroom is properly called *sɛjɛŋgi* at the end of the marriage month, when he comes to live in the house of his wife's clan: but *sɛjɛŋgi* is also applied to temporary connections; thus, to tell a boy that he has a new *sɛjɛŋgi* is to taunt him with the light behavior of some woman of his clan.

2 + plural, *sɛjɛŋgi* and *sɛjɛŋgi*.

A man calls his wife's sister's husband *ngbi sɛm pu'a'e*, "my husband partner".

sa'i. Bride; son's wife, brother's wife, mother's-brother's wife, etc.; applied by males and females to the wife of any man of the speaker's clan, and also by a man to his son's wife. (New Mexican Tewa *sa'i*, bride, *sa'e*, daughter-in-law, etc.) A woman calls the wife of her 'e *sɛŋ* (e. g. her brother's son's wife) *ng'ɪmɪ sa'i* or *ng'ɪmɪ 'e sɛŋ sa'i*. A man calls his wife's brother's wife and his wife's mother's-brother's wife *ngbi sa'i*. A woman calls her husband's brother's wife *ngbi sa'i pu'a'e*, "my bride partner". A clansman's widow is called *sa'i* until she marries again and even afterward if she has children by the speaker's clansman.

sa'i appears to mean "child-bearing"; thus, *ng sa'i po*, "she is with child"; *wimo ng xdi ng sa'i po*, "while she lived single she conceived". Formerly a woman used to call her son's wife *ngbi 'e kaga* (meaning of *kaga* unknown) until she conceived, when she began to call her *sa'i*.

ja (New Mexican Tewa *ja'a*, relative of husband or wife). A man calls his wife's mother, sister, and all her clanswomen irrespective of age *ngbi ja kwijo*, and his wife's father, her brother, and all her clansmen *ngbi ja sɛno*. (Cf. *ja'a*, wife, and *sa'i* bride.) A woman gives these names to her husband's mother, sister, clanswomen, brother, clansmen, and father. The husband of the mother's elder sister, etc., if

called *tada* instead of *sqjngi*, responds with *ngbi'e* instead of *ngbi ja kwijo* and *ja sño*. See also *jija*.

FAMILIAR ILLUSTRATIONS

The reading of a list of terms is never very satisfactory, and it may be useful to add a brief outline of their relation to daily life.

Take the point of view of a Tewa girl, a member of the Corn clan, born and reared in one of the two Corn-clan houses at Hano. Nearest to her, in daily life, come the inmates of the house in which she lives. The nucleus of the household, the essential and permanent part of it, consists of men, women, and children of the girl's own clan. The center of the house is *ng'imbi saja*, "our mother's-mother," the owner and dispenser of all stores and food-stuffs, the guardian of religious apparatus belonging to the clan, the director of household work, the person who gives orders—so far as orders are given at all in this easy-going tolerant society. Behind her looms the vague tradition of *ng'imbi papa*, "our mother's-mother's-mother" deceased, and all *ng'imbi saja'i* to the remotest antiquity. Whatever *saja* does or enjoins on us is assumed to be exactly what they used to do.

Beside her stand *ng'imbi m̄m̄x'i*, "our mother's brethren." The same general title applies to *ng'imbi m̄m̄x'i* who are *saja*'s sons, and *ng'imbi p'epe'i*, *saja*'s brothers; and they are backed by the authority of all *ng'imbi m̄m̄x'i*, the men of our clan, from time immemorial.

M̄m̄x'i sleep, as a rule, at the homes of their wives (*ng'imbi sa'i'i*, "our brides"), but they are constantly coming in and out of this, which they call their own house. They take their places at meals here as a matter of course, invite visitors to eat, behave as hosts and masters of the house; though they do not (if they are married) contribute anything to the material support of our household, since they have to supply corn, meat, and wood to their wives' homes. Their claim to obedience is a religious one—they are "our *m̄m̄x'i* who go out to see the sun before us," who give us advice "how we shall live." They consecrate our seed-corn and

make prayer-feathers for us all at the Winter Solstice: their feather-boxes, dancing-clothes, weaving-tools, jewelry are kept in our house, and they borrow our finery and ornaments as a matter of right. We women "ought to be happy when we cook for our *m̄m̄ŋ'j*, for our elder brothers, and for our sons-in law, "o make them strong." Whatever *m̄m̄ŋ'j* say is unquestionably right; *saja* is the only person who may ever criticize them, and she does so only on questions of practice, not of theory.

Next comes *n̄bi jija*, "my mother," and her sisters *n̄bi ko'o'j*, married and unmarried. My eldest *ko'o*, generally called *n̄bi ka'je*, partakes somewhat of *saja*'s authority, gives out stores in her absence, buys and sells corn and meat, and knows where the masks are kept.

Then come the young people of my own generation; the children of my own parents, my elder sister and brother, *n̄bi kaka* and *n̄bi pi'pi*, and my younger brothers and sisters *n̄bi tje*; and also the children of my *ko'o'j*, whom I address generally as brothers and sisters but sometimes as *m̄m̄ŋ* or *ko'o*, and *ko'o'e*, according to sex and seniority.

So much for my own clanspeople in the household. Besides, there are the men of other clans who are *n̄'imb̄i*, *s̄j̄j̄ŋgi'j*, "our bridegrooms," married to our clanswomen. These are the men who support, or should support, the household, bringing their yearly crops to their wives to be stored and administered by *saja*, killing sheep (if they have any), and bringing firewood at frequent intervals. They range from *t'ele*, *saja*'s husband, who is quite a permanent, central figure in our household life, to the lately-acquired husband of my younger *ko'o*, who is still shy and sulky and inclined to shirk his duties, and must not be driven too hard for fear of a quarrel. *t'ele*'s own mother and sisters are dead and he makes our house his home; although, if *saja* were to die, he might possibly go to live with one of his *m̄m̄ŋ'e*, his clanswomen. His interests are identical with ours, for he too is fed and warmed by the contributions of our younger *s̄j̄j̄ŋgi'j*.

Our *s̄j̄j̄ŋgi'j* sleep in our house as a rule, but they spend much of the day in their own clan-houses: they have duties in the kiva

where their own clans "go in," but they also dance "to help our *m̄m̄'j*" in ours.

One among the *s̄j̄j̄ngi'j*—*n̄bi tada*, my father—stands in a close and tender relation to myself and my sisters and brothers. Although, in the opinion of the elder members of the household he is not so near a relation to me as are *m̄m̄'j*, my own clansmen, he seems to me personally nearer and dearer. *M̄m̄'j* give advice, instruction, and reproof, not unmixed with teasing; whereas *n̄bi tada* gives clothes, shoes, and toys, tells stories and sings to us children, caresses us and plays with us. He and my mother and my brothers and sisters and I form a little camp of our own, as it were, in the midst of the crowded household life; we sit together to eat and to talk, and sleep together on my mother's own sheepskins and blankets. My father likes to sleep with my little brother's head on his shoulder.

The other half of our clan inhabits the ancestral house from which our *saja*'s mother migrated many years ago. The old lady who presides over it is "a sort of sister" to our *saja*, and addresses her sometimes as "elder sister," *kaka*, sometimes as "mother's elder sister," *ka'je*. Her daughters and daughter's children call our *saja* sometimes *ka'je*, sometimes *saja*. We address their *saja* in the same way. The members of her household are our *matu'j*, and they ought to be our nearest friends; but there are times when a degree of coldness, or perhaps of jealousy, keeps us apart. Our *m̄m̄'j* are not very good friends with their *s̄j̄j̄ngi'j*.

Outside our own clan we have four groups of relations with whom we come into almost daily contact.

One of these is my father's clan, in which all the men and boys, irrespective of age, are my *tada'j*, "fathers" (though my father's own brothers are my *tada'j* more particularly), and all the women and girls my *ki''u'j*; they all visit familiarly in our house and we in theirs. More particularly, my father's mother is my *kuku*, who attended at my birth, cut the umbilical cord, and conducted the name-giving ceremony, Hopi fashion, and my father's own sisters are my *ki''u'j* par excellence. Their house is a second home to me; they caress me, wash, comb, and cut my hair, improve my manners

and morals—my youngest *ki'u* is modern enough to make clothes for me on the American sewing-machine. From time to time my sisters and I grind corn for them; and whenever my father gives clothes to us or to my mother, we make a formal presentation of wafer-bread and other food "to pay them." My brothers kill rabbits and pile snow for their *ki'u*; when they are old enough they will go a journey to fetch salt for them. In old times their *ki'u* would have danced with them when they took a scalp.

The second group of relations consists of our *'e sē* and *'e kwijo*, "men-children" and "lady-children"—all the children (whatever their clan) whose fathers are, or were, men of our clan—along with their mothers, our *sa'i*. They are our natural friends and play-fellows, and they resort to our house just as we go to the house of our *kuku* and *ki'u*. *Saja* caresses and admires them, and shows them a more demonstrative affection than she shows to us, her own *saja'e*.

These two groups stand closest to us. More distant, but still familiar and friendly, is the clan of our mother's father, *saja's* husband, in which we call all the men and boys *t'ele* and all the women and girls *t'ele kwijo*, "grandfather lady." Conversely there are individuals in various clans whose mother's father was of our clan; these (irrespective of age) are our *t'ele'e*.

Here the circle of familiarity, marked by the use of kinship-terms, ends so far as our own village is concerned. The rest are merely "the people," *lowa*, of doubtful friendliness, always capable of hostility, jealousy, and ingratitude toward us as a clan. Not that our *tada'i* and *t'ele'i* are always exempt from these failings—they often offend us or leave us in the lurch. But their defection is a definite grievance—"they ought to help us, because they are our *tada'i*" (or *t'ele'i*, as the case may be), whereas the rest of the people are almost normally disagreeable! *lowa to'a we di muḍil* "the people are not good" is as common a saying with the Tewa as *Hópi ka Hópi* is with their Hopi neighbors.

Outside our own village we claim and recognize relationship with members of clans corresponding to our own. Thus we constantly welcome to our house and meals *ng'imḥi k'osōn saja*, "our

Hopi mother's-mother," the senior woman of the Corn clan in Walpi. We have a *saja* at Tuba City, and a Navaho *saja*. *Mamxi*—men of the clan—from all the Hopi villages visit us: they come to our house to eat and sleep; our women offer to wash and comb their hair, our men let them into good bargains. Our grievances against our fellow-villagers are discussed with them quite freely, and it is taken for granted that they will take our side of the question. Similarly, since my own father is of the Hano Cloud clan, I call a Cloud-clan man from Oraibi or New Mexico "father"; and as my mother's father is of the Bear clan, I call a Bear-clan man from any village *tele*—not forgetting the members of linked clans who share these titles.

Deferring to another occasion the discussion in detail of the usages of kinship terms at Hano and the comparison of them with the usages of the New Mexican Tewa, I will briefly indicate their bearing on the regulation of marriage.

It will be convenient to take, again, the view-point of a Tewa girl.

There is no prescribed clan from which she must take a husband.

Her own clan is forbidden to her, and the mere suggestion of marriage with a clansman, even a conventional clansman from another village, gives her a very disagreeable impression. If her clan is one of a group of linked clans, marriage with members of the linked clans is equally forbidden. Thus a woman of the Tobacco clan at Hano could not marry a man of the Rabbit clan at Walpi.

Her father's clan, with its linked clans if any, is forbidden: she cannot marry any man whom she calls *tada*.

Her mother's father's clan is not forbidden: she can marry a man whom she calls *tele*, or conversely, a man whose mother's-father was of her clan.

She cannot marry her *eseta*, a man whose father was of her clan. That is, her brother's son, and her mother's brother's son, are barred.

She cannot marry a man who has the same *tada* as herself. Thus, she cannot marry her own father's son by another wife (and so of another clan); he is her "brother," *pipi* or *tije*. She cannot

marry her own father's brother's son; he is her "brother," because they call the same men *tada*. Occasionally a girl marries her father's sister's son's son, but this is spoken of as an instance of modern license, for her father's sister's son is her *tada*, and therefore his son is her "brother."

It will be seen that by the Hano regulations three kinds of cousin-marriage are barred. Marriage between the children of sisters is barred by the prohibition of marriage within the clan. Marriage between the children of two brothers is barred because they have common *tada'i*. And marriage between the children of a brother and a sister is barred by the rule which forbids a woman to marry her *tada* or her 'e *sɛŋ*.

This last rule is cited by the Hano Tewa themselves as the chief difference in custom between themselves and the Hopi, since cross-cousin marriage (between the children of a brother and a sister) is occasional at Walpi and Sichomovi, and regular in all the other Hopi villages. At the same time there are indications of a former Tewa custom of cross-cousin marriage, or, in other words, of the repeated and prescribed intermarriage of a pair of clans. When a boy baby is brought to visit in the house of his father's clan, he is loudly welcomed as the "husband," *sɛŋ*, of one of the girls of the clan, that is, of one of his *ki'u'i*, whom by present-day custom he cannot marry. In the same way a girl baby is hailed as the "wife" of one of her *tada'i*. A woman speaks of her son's sons in jest as "our bridegrooms," *sɛŋjɛŋi'i*, as if they were expected to marry some of the girls of her clan. A man must "pretend to like" his father's sister's daughters and his father's sisters. (Similarly a woman must "pretend to like" the husbands of her father's clanswomen.) When a young man's approaching marriage is announced, his *ki'u'i*, the women of his father's clan, are supposed to take it amiss; they "fight" one of his clanswomen and daub her with mud, or they visit his clan-house to "scold" and "talk queerly." A grown-up girl sometimes playfully warns-off other girls from her mother's brother's son, her 'e *sɛŋ*; although she may not marry him, she half-seriously resents the advances of other girls toward him.

In a less degree a woman is expected to resent the marriage of a man who is her *t'el'e'e*, i. e., whose mother's father was her clansman: she affects a little coolness toward the young man's clan, threatens not to ask his sisters to her house, and so on.

The Tewa themselves give no explanation of these inconsistent usages.

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SUPERNATURAL BEINGS OF THE HURON AND WYANDOT¹

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SUPERNATURAL attributes and power, in the ancient beliefs of the Huron and Wyandot, were ascribed to their mythological beings and to many varieties of charms and amulets.²

A brief description of two classes of deities and spirits being the object of this paper, we have here to pass over charms and amulets, as they were inanimate objects endowed with "power," and not necessarily connected with or derived from deities or spirits.

The mythical beings of the Huron and Wyandot pantheon may conveniently be classified into three groups, namely: (i) The primeval deities and the races of giants and dwarfs of their cosmogonic myths about the origin of the world; (ii) the less homogeneous group of sky gods (Hamendiju, the Sun and the Moon, the Thunderers), also belonging to the religions of many foreign tribes, and accounted for in various ways by the Iroquois and Huron; (iii) and the multiplicity of good and bad monsters—the *uké*—said to dwell everywhere and mingle with the Indian folks for their benefit or detriment. We shall restrict the present study to the primeval cosmogonic deities and the sky gods.

I

The primeval beings of the world, explicitly described in aboriginal cosmogonic myths,³ belong to the following categories: The

¹ Published with the authorization of the Geological Survey of Canada, Ottawa.

² The charms and amulets, termed *saskewandé*, were inanimate objects of queer appearance or origin, treasured on account of their reputed magical efficiency. Their fictitious value, according to Bressani, had its psychological origin in the "superstitious regard" of these peoples "for everything which savoured a little of the uncommon" (*Jesuit Relations*, Thwaites ed., vol. XXXIX, pp. 26-27).

³ A version of the cosmogony has been recorded among the ancient Hurons (1632-3) by Father Brébeuf (*Jes. Rel.*, Thwaites ed., vols. VIII, pp. 117-119, and X, pp. 125-139). Brother Sagard, about 1615, had also noted down a few fragments of the same

superhuman people living in the Sky-world, before the creation of "the Island" (North America); the anthropomorphic animals of the inferior water-regions by whom "the Island" was made on the Big Turtle's back; the deities that fashioned "the Island" for the coming of the Indian peoples; and, last of all, the races of giants and dwarfs.

The pristine Sky-world, the ultimate origin of which remains unexplained, was the very picture of North America with its native inhabitants. Human-like people, to whom life and death were still unknown, were leading a peaceful existence in their villages, distributed all about the solid sky-land. At the head of their society were chiefs, seers, and shamans; and they depended mainly upon their fruit trees and the yield of their Indian corn patches for their subsistence. One day, a chief's daughter fell through a hole in the ground into the abysses of the inferior world, an immense sheet of water with no land anywhere. The reasons given as to why the Woman fell from the sky, being at variance, assume a slight importance. Some Oklahoma Wyandot were of opinion¹ that a shaman had brought about the accident by advising that they should dig into the roots of a tree where a medicine could be found that could cure the young woman of a mysterious disease. The uprooted tree, in fact, fell through the ground into the lower world with the woman entangled in its branches. According to another opinion,² a young woman used every day to gather a basketful of corn for her brothers. Having grown tired of her task, she destroyed the corn patch; and, as a punishment for having thus ruined

traditions (*Hist. du Canada*, Tross ed., pp. 448, 451-455). The two fairly extensive versions published by Schoolcraft (*Ojéda*, pp. 207-211) and H. Hale (*Jour. Am. Folk-Lore*, vol. I, pp. 181-183) were secured in the course of the last century among the Wyandot of Anderdon reserve, along the Detroit river, Ontario. Recently, still more extensive versions have been recorded among the Kansas City and Oklahoma Wyandot by W. E. Connelley (*Jour. Am. Folk-Lore*, vol. XII, no. XLV, p. 199; and *Wyandot Folk-lore*, pp. 67 and following), and by myself (the two versions of Mr B. N. O. Walker and Mrs Catherine Johnson, 1911 and 1912, are soon to be published by the Anthropological Division of the Geological Survey of Canada).

¹ Related in Connelley's version, and also in that of Mr B. N. O. Walker, taken down by myself.

² Catherine Johnson, Wyandotte Reservation, Oklahoma; recorded by myself in 1912.

their subsistence, her brothers cast her into the Underworld, through an opening. Father Brébeuf has left us two other explanations that he noted among the ancient Huron; the woman was said, in the first, to have cut down the tree "from which those who abode" in the sky "obtained their food," and, out of grief, to have thrown herself after the tree into the abyss. It appears, in the second version, that the woman fell into a hole while chasing a bear, and dropped into the lower regions. It was also suggested by some other informants¹ that, by mischance, the woman had been pushed by her husband into a rift in the sky, and had thus fallen from above.

In the dark regions of the Underworld there was no land anywhere. At first, the only inhabitants of that vast sea were human-like water-fowls and quadrupeds that lived in the water. Some water-fowls² rescued the falling Sky-woman and held her above the waters, while a council of the animals assembled and decided that a land should be made on the Big Turtle's back for the Woman to live upon. Otter, Muskrat, Beaver, and all the best Divers perished in their futile attempts to secure some of the earth clinging to the roots of the sky-tree lying at the bottom of the sea. The obscure and ridiculed Toad was the one that finally succeeded and brought back a mouthful of earth, with which "the Island" (North America) was made. It is believed by some that the Little Turtle³ made "the Island" by rubbing and spreading the earth around the edge of the Big Turtle's shell until it had become a large island. The Woman, according to others,⁴ sprinkled the grains of earth at arm's length on the Turtle's back and soon found that land was growing about her.

But there was no light on "the Island." The animals decided in a council to send the Little Turtle⁵ on a cloud, into the sky, so

¹ Wyandot of Anderson Reservation, Ontario, to Horatio Hale (*Jour. Am. Folk-Lore*, vol. 1, p. 181).

² Geese or swans, according to two Wyandot informants, and loons or seagulls according to others.

³ In W. E. Connelley's *Wyandot Folk-lore*, pp. 68-69, and Mr B. N. O. Walker's versions (recorded by myself in 1911, at Wyandotte, Oklahoma).

⁴ Catherine Johnson's version (recorded by myself at Wyandotte, Oklahoma). H. Hale in *Jour. Am. Folk-Lore*, vol. 1, p. 181.

⁵ The "Prairie Turtle" or "Terrapin," it is likely.

that she could make some luminaries there. So it was done;¹ and the Little Turtle fashioned the sun out of flashes of lightning and, having made him a living being, she gave him the moon to wife. As they were meant to travel from east to west along a path in the sky, they found their way back to their starting-point, in the eastern sea, through a vast passage that the Mud Turtle² had dug for them, under the earth. In the course of ages they had many children, the Stars "that run about the sky." The Sun and Moon quarreled one day, and the Sun so badly abused the Moon that without the Little Turtle she would have forever wasted away. The phases of the Moon are explained as periodical relapses into the original state of prostration that followed her disgrace; and the annual decline of the Sun³ seems to be a punishment inflicted by the Little Turtle upon him for his rash deed. The Little Turtle, therefore, has always been known as the "Keeper of the Sky."

Some time after the making of "the Island" and the luminaries, a number of land animals and birds—the Deer, the Wolf, the Bear, the Hawk, and others—are mentioned as taking part in the animals' councils. Nobody now can tell where they were from.⁴ It is also believed that, after memorable adventures, during the early ages, they were led by the Deer into the sky, where they still have their abode.

When the Woman fallen from the sky began to wander about the Island she found an old woman,⁵ who became her guardian,⁶

¹ The creation of the Sun, Moon, Stars, and underground Passage is explained only in two Wyandot versions of the cosmogony—those recorded by Mr Connelley and by myself.

² The subterranean passage is said to have been made by the Mud Turtle, in Connelley's account (*Wyandot Folk-lore*, p. 31), and by the Little Turtle in that of Mr Walker.

³ This can only be inferred from Mr Walker's version when compared with some Iroquois explanations of the same phenomenon.

⁴ The many illogical points to be found in these cosmogonic myths are generally due to the fact that the versions obtained were mere fragments. When some informants were pressed for more rational explanations by Father Brébeuf, they replied that they did not know any more than they had learned from their forefathers.

⁵ This is in conformity with the old-time custom of these Indians of secluding grown-up girls for a certain period, during which they were daily visited by an old woman, termed "grandmother."

⁶ The Iroquois myths generally have it otherwise; that is, the woman fallen from

and whom she called her "grandmother." Soon twins that had been mysteriously begotten in the sky came to the Sky-woman. One of the twins, out of mere spite, killed his mother, as he came into this world, by tearing his way through her arm-pit.¹ After her burial, cereals sprang from the various parts of her body, for the future use of the Indians: "from her head grew the pumpkin-vine; from her breasts, maize; from her limbs, the beans and other useful esculents."² Of the twins one was good and the other evil. The first was called *Tijuská'a*,³ "the Good One," and the other, *Taweskare*, "Flint." The good one is also called *Tse'sta*, among the Oklahoma Wyandot. The old woman raised them just as if they had been human children. While *Tse'sta*'s good nature was constantly developing, *Taweskare*'s evil disposition was becoming more emphatic, until the time came for them to fulfill their mission on "the Island," that is, to prepare it for the coming of man. It appears, in certain traditions,⁴ that the Twins, in order possibly to avoid conflict, divided the land between themselves. *Tse'sta* secured the eastern and *Taweskare* the western lands, wherein they were both to utilize their creative powers. According to another opinion⁵ it was understood that they were to work in turns over the same territories. After a time, however, the Bad One went out west to vent his wrath unhampered. All are agreed that each of the Twins had an opportunity to inspect his brother's creations and reduce to a certain extent their good or bad qualities. Thus the Good One made the surface of the earth smooth or with slight

above gave birth to a daughter, who died at the birth of her own children, the Twins. Sagard's version, recorded among the ancient Huron, implicitly refers to a similar tradition (*Hist. du Canada*, pp. 451-2).

¹ Schoolcraft, *Oneida*, pp. 207-211; H. Hale in *Jour. Am. Folk-Lore*, pp. 181-183; and Mr Walker's version.

² H. Hale (*Jour. Am. Folk-Lore*, vol. 1, pp. 181-183). Schoolcraft's version: The woman's body was laid upon a scaffold, and "from the droppings of her decay, where they fell on the ground, sprang up corn, tobacco, and such other vegetable productions as the Indians have" (*Oneida*, pp. 207-211).

³ This is the phonetic equivalent in modern Wyandot of the same name *Jouskeha* or *Juskeha*, as recorded by the early missionaries.

⁴ H. Hale (*Jour. Am. Folk-Lore*, vol. 1, pp. 181-183). Connelley (*Wyandot Folk-lore*, p. 74).

⁵ That of Mr Walker.

undulations, with park-like woods, rivers with a two-fold current running in opposite directions, so that the Indians might travel without paddling. He lavishly created berry patches loaded with berries, trees with large and juicy fruits, the maple, the sap of which was like syrup, Indian corn with a hundred ears on each stalk, and bean-pods growing on trees and long as the arm.¹ The Bad One following his brother, sadly damaged all these things. He tore up from every river its returning current, remarking, "Let them at least have to work one way up stream."² He covered the surface of the earth with flints, boulders, and rocks, pulling up huge mountains here and there, and obstructing the land by means of marshes and thick forests strewn with vines, thorns, and brambles. He also spoiled the fruit trees by scattering them far apart and making the fruits and berries small, stony, and sour. The Good One had brought forth gentle game animals for the people, and large fishes without scales; but his wretched brother covered the fish with hard scales, and imprisoned the animals in a cave, frightening them and making them wild. Besides, he made fierce animals that were to be the enemies of mankind, and monsters of all kinds with which the earth has ever after been infested. He made an immense Frog³ that drank all the fresh water of the earth. The only thing that the Good Twin could do was to reduce the extent of such evils. He released the animals from the cavern, and drew the water forth by cutting the frog open, or simply making an incision under her armpit, after having overcome her.⁴ On account of lack of space here, we have to pass over the memorable deeds of the twins, who spent long ages at their work of fashioning the earth for the coming of man. In the end the Good Twin brought the Indian man forth; some say that he created him outright, while others⁵ think that he

¹ These last details, found in Connelley (*Wyandot Folk-lore*, pp. 74 and following) are at variance with the traditions that Schoolcraft and Hale noted down among the Anderdon (Ontario) Wyandot, to the effect that the cereals and tobacco sprang from the various parts of the woman's body after her burial.

² H. Hale (*Jour. Am. Folk-Lore*, vol. i, pp. 181-183).

³ A frog, in Brébeuf (*Jes. Rel.*, Thwaites ed., vol. x, pp. 125-139); and a toad, in Hale (*Jour. Am. Folk-Lore*, vol. i, pp. 181-183).

⁴ *Jes. Rel.*, *ibid.*; H. Hale in *Jour. Am. Folk-Lore*, vol. i, pp. 181-183.

⁵ Connelley, *Wyandot Folk-lore*, p. 80.

simply brought the Huron and Wyandot peoples down from the Sky-world. He instructed them in all kinds of useful pursuits, showed them the art of hunting, and gave them good advice for their religious and civil welfare.¹ Taweskare, for his part, called forth all kinds of human beings, generally bad and unfriendly to Tse'sta's peoples.

The everlasting opposition between the Good and Bad Twins finally developed into actual strife.² It is said³ that Taweskare made the flinty giants to wage war against his brother, and that Tse'sta, on his side, made the dwarfs to stand on his behalf. After a lengthy contest, in which both artifice and strength were used, the Good One outwitted his brother and slew him with sharp deer-horns.⁴ During the following era, Tse'sta left his people in the great cavern with the ghost of the Woman fallen from the sky at their head; and he went all over the earth, restoring as well as he could the ruin caused by his war against his brother, and making the world ready for the Indians.⁵ In a modern addition of the myth, he is said to have come across the God of the white man near the mountains. A dispute arose between them about the possession of these domains. Tse'sta, however, defeated the invader in a magical contest and frightened him away.⁶ When he returned from his wanderings, he found the old woman, his grandmother, "in ill humour, as she always was," for she "hated him and loved his brother, whom he had killed. He, therefore, . . . cast her up, and she flew against the moon, upon whose face traces of her are still to be seen."⁷ The earth being now ready, Tse'sta went to the

¹ *Jes. Rel.*, vol. x, pp. 125-139. Finley, Rev. J. B., *Life among the Indians*, p. 291. Schoolcraft, *Onéida*, pp. 207-211.

² Brébeuf, *Jes. Rel.*, *ibid.*; Schoolcraft, *op. cit.*; H. Hale, in *Jour. Am. Folk-Lore*, vol. 1, pp. 181-183. Connelley, *Wyandot Folk-Lore*, p. 80. Walker's version, recorded by myself.

³ Connelley, *Wyandot Folk-Lore*, p. 91.

⁴ In the Schoolcraft version it is said that the Twins decided that one had to get rid of the other in some way, but without direct violence. The Good One finally won a race over his brother and caused him to fall on sharp buck-horns, after which he despatched him (*Onéida*, *op. cit.*).

⁵ Connelley, *Wyandot Folk-Lore*, p. 81 et seq.

⁶ Finley, *Life among the Indians*, p. 328. Schoolcraft, *op. cit.*

⁷ Schoolcraft, *Onéida*, *op. cit.*

great cavern or Underworld, and spoke to the Woman, their leader. She replied to him, "My son, lead them forth in the Order of Precedence and Encampment. . . ."¹ And he led the tribes to the cave's entrance, where they had their first view of this world. The voice of Hino, the Thunder, shook the air; but they were told not to be afraid, for lightning was never to strike a Huron.² And, scattering in various directions, they established their villages about the land.

Let us now consider for a moment the Huron and Wyandot beliefs regarding the fate of these cosmogonic deities. The sky is said to be still inhabited by the people from whom the fallen Woman proceeded; and the human-like animals of the pristine Water-world are described as having ascended, after the Deer, and with the assistance of the Rainbow, into the celestial regions of the Little Turtle, where they are still supposed to be.³ The Big Turtle, however, remained under "the Island," and she is still there holding it upon her back; so that whenever there is an earthquake, some of the old Wyandot may still be heard saying, "Well! the Big Turtle has been shifting her position. She must have moved a paw!"⁴ It is interesting to note, besides, that the Big and Little Turtles,⁵ and perhaps also the Mud Turtle—who appears to have made the subterranean passage for the Sun and the Moon⁶—being the totems of three Huron and Wyandot clans, are supposed to have extended their protection to their human protégés almost to the present day. The Deer, the first of the animals to climb into the Little Turtle's sky-land, is also the totem of the Deer clan, the head clan of one of the phratries.

The fate of the higher divinities, Tijuská'a (or Tse'sta), Taweskare, their mother and "grandmother," and of the dwarfs and giants, is somewhat more obscure, owing to various traditions that

¹ Connelley, *Wyandot Folk-lore*, p. 82.

² Walker's version.

³ Sagard, *Hist. du Canada*, pp. 451-452. Brébeuf, *Jes. Rel.*, op. cit. Connelley, *Wyandot Folk-lore*, p. 77. Walker's version.

⁴ Connelley, *Wyandot Folk-lore*, p. 45. Mr Walker's version.

⁵ Apparently the "prairie turtle" or "terrapin."

⁶ Connelley, *Wyandot Folk-lore*, pp. 31, 77.

are slightly at variance. After Taweskare had been slain by Tse'sta, his ghost reappeared at night, and after he was refused admission by his brother, he was heard saying: "I go to the northwest and you will never see me more, and all who follow me will be in the same state. They will never come back. Death will forever keep them."¹ Taweskare is stated in another tradition² to have gone to the far west and to have said "that thenceforth all the races of man would go to the west, like him." "And," added the informant, Clarke, "it is the belief of all the pagan Indians that, after death, their spirits will go to the far west and dwell there."

The Woman fallen from the sky, mother of the Twins, is the first one who was known to die in this world. It is not easy to distinguish her personality from that of the old woman, her "grandmother," who took care of her and the Twins, in "the Island." In some traditions her spirit is said to have appeared to Tse'sta and revived him when he was about to be defeated in his contest with Taweskare.³ She is found, later, at the head of the sleeping Wyandot, in the Underground world; and when her son, Tse'sta, announced that the earth was ready for the Indians, her parting words were, "My son, . . . they shall come to me on their journey to the Land of the Little People"⁴ (that is, the land of the dead). Her domains, therefore, are the regions whither the human souls repair after death, and with the care of which she is intrusted.⁵

Some time after the coming of man into this land, Tijuská'a (or Tse'sta) and his "grandmother" established their abode in a remote country somewhere,⁶ most say in the far east,⁷ and some in the middle (of the sky).⁸ Traditions have been recorded among the ancient Huron to the effect that a man named Attiouindaon and, later, four adventurous young men had visited the home of these

¹ Schoolcraft, *op. cit.*, pp. 209-10.

² H. Hale, in *Jour. Am. Folk-Lore*, vol. 1, p. 180-183.

³ H. Hale, *ibid.*

⁴ Connelley, *op. cit.*, p. 82.

⁵ Sagard, *op. cit.*, p. 450. Brébeuf, *op. cit.* Connelley, *op. cit.*, p. 46.

⁶ Sagard, *op. cit.*, pp. 451-452.

⁷ Brébeuf, *Jes. Rel.*, vol. VIII, p. 119, and vol. X, pp. 125-139. Connelley, *Wyandot Folk-lore*, pp. 48-49.

⁸ Brébeuf, *Jes. Rel.*, vol. VIII, p. 119.

divinities near the eastern sea.¹ In fact, it was the current belief that these beings are "human and corporeal"; that they live in bark houses like the Indians, sow and reap corn and other things, sleep, eat, and are subject to all the necessities of human life.² It seems that Tijuská'a was until recently considered as the living providence of the Huron and Wyandot; for it was he "who gives them the wheat [Indian corn] to eat; it is he who makes it grow and brings it to maturity. If they see their fields verdant in the spring, if they reap good and abundant harvests, and if their cabins are crammed with ears of corn, they owe it to Jouskeha."³ He was considered, indeed, as a benefactor who takes care of the Indians and all that pertains to their livelihood.⁴ He has even been called by some one⁵ "the God of Forest or Nature." He was far, however, from being granted unlimited and absolute power over things; and Sagard states that the Huron readily admitted that the Christian God seemed to have greater powers than Juskeha, who, in his remote country, was not exempt from the vicissitudes of human life. He was also said gradually to grow old, but without losing any of his vigor, and from time to time to transform himself into a young man of about thirty years of age, thus not being subject to the fatality of death.

The personalities of the "grandmother" and the Woman who died at the birth of the Twins, have long been somewhat confused. The spirit of the deceased woman seems to be in charge of the souls in the Underworld, while the grandmother is stated in most traditions to be living in the east, with her grandson Tijuská'a. It is stated, however, that the grandmother is wicked, because she often spoils the good things done by her grandson, and that she is the one who causes men to die.⁶ Although they play an important part in the affairs of man, these divinities have never received any very marked form of worship, notwithstanding the fact that the Huron, accord-

¹ Sagard, *op. cit.*

² Sagard, *op. cit.*, pp. 451-452. Brébeuf, *Jes. Rel.*, vol. VIII, p. 119, and X, pp. 125-139.

³ Brébeuf, *Jes. Rel.*, vol. X, pp. 125-139.

⁴ Sagard, *op. cit.*, pp. 451-452. Brébeuf, *Jes. Rel.*, vol. X, *op. cit.*

⁵ P. D. Clarke, an educated Wyandot of Anderdon, Ontario.

⁶ Sagard, *op. cit.*, pp. 451-452. Brébeuf, *Jes. Rel.*, vol. VIII, p. 119.

ing to Brébeuf, esteemed themselves greatly obliged to Tijuská'a, and that he was supposed to be present with his grandmother at the feasts and dances that took place in their villages.¹

Tijuská'a has sometimes been said by the natives and by ethnologists² to be the sun, and the Woman the moon. It may be due to the fact that, among the Iroquoian peoples, as well as among many foreign tribes, the sun and the moon have long been considered as high divinities connected with nature and the seasons, and have been worshiped as benefactors. It is not surprising, therefore, that the Huron and Wyandot should occasionally have assimilated them with their national deities, to whom their mythology ascribed similar functions.³

The dwarfs and giants are described in one cosmogonic version⁴ as having been created by Tse'sta and Taweskare on the occasion of their feud. It seems likely, however, that the connection of the giants and dwarfs with the cosmogony was but slight and not generally acknowledged, their origin being probably ascribable to other sources. In fact, similar beings are known in several American mythologies at large.

According to an Oklahoma Wyandot informant,⁵ the dwarfs were of two varieties; the Tiké'a and the Kahiñq'a. The Tiké'a, or Little People,⁶ are said, in one version of the cosmogony, to have assisted Tse'sta in his war against his brother and the giants, and then to have gone to the world of souls in the west. They are believed to have extended their protection to the Wyandot on several occasions; for instance, when they helped them in chasing away the Stone giants and destroyed the Witch Buffaloes that were the calamity of some Kentucky springs.⁷

¹ Sagard, *ibid.*, pp. 553-555; Brébeuf, *Jes. Rel.*, vol. x, pp. 125-139.

² Cf. Brinton, *American Hero-Myths*, Phila., 1882, pp. 53-62, and *Myths of the New World*, 3d ed., pp. 156ff., 203-205; Parkman, *Jennett*, pp. lxxv-lxxxvii.

³ Cf. *Zeitschrift für Ethnologie*, 45 Jahrgang, 1913, Heft I, pp. 64-71.

⁴ Connelley, *Wyandot Folk-lore*, p. 91.

⁵ Mrs Catherine Johnson; information collected by myself.

⁶ Connelley in *Jour. Am. Folk-Lore*, vol. xii, p. 124, and *Wyandot Folk-lore*, p. 81, 82, 86; and information collected by myself among the Lorette Huron and Oklahoma Wyandot, the informants being F. Grosblouis (Lorette), Mrs I. Walker, Mrs C. Johnson, Mary Kelley, and others (Oklahoma).

⁷ Connelley, *Wyandot Folk-lore*, pp. 91, 92.

The dwarfs were extremely small and old beings, and their bodies resembled those of human creatures. They are stated by some to have now become invisible.¹ Although powerful and witch-like, they are good-natured and are not known to have ever done any harm to the Huron or Wyandot. Their ways of living are those of human beings. They are dressed with clothes made of hide and woven hair, carry their children on tiny cradle-boards, and especially enjoy singing and dancing.

The Kahiñq'a have ducks' feet, and arms without joints in the elbow. They are benevolent; and, in one instance recorded, a dwarf woman is said to have appeared to a hunter, in a hollow tree, and to have given him a charm for good luck in hunting. That she was very old is shown in a discussion that she had with the hunter:² "You are extremely small!" said he, "You must be very young!" But she retorted, "No! I am really much older than you." He could not believe her, as she was so very small. Then they talked about things of the past, things that had happened long ago. She told him all about events long since forgotten, which he had never heard of. She truly believed herself much older than he. But he would not admit it. "Do you remember the time," asked she, "when this earth was drowned?" And he inquired where the people went while the earth was covered with water. She explained that they had climbed up into the cliffs.

These little beings are said to have left marks and traces of all kinds on rocks, and are believed sometimes still to be heard singing and dancing in caverns or under the ground. Footprints may still be seen on rocks at Lorette (Quebec), which the Huron ascribe to dwarfs. And a number of Oklahoma informants speak of several localities either near Kansas City, or near Wyandotte, Oklahoma, where they have recently heard the dwarfs singing and dancing, and the beating of their water-drums, or have seen on rocks marks of their feet, arms, hands, and bows and arrows.

The giants, or *Strendu*, the averred enemies of the Wyandot,

¹ Mrs C. Johnson and Catherine Armstrong (Oklahoma Wyandot); information collected by myself.

² From a Wyandot text of Mrs C. Johnson (Oklahoma Wyandot), recorded by myself, in 1912.

were dreaded on account of their extraordinary size and powers. Some¹ describe them as being half-a-tree tall and large in proportion. Their bodies were covered all over with flinty scales, which made them almost invulnerable. When the Wyandot, perchance, surprised one asleep, they would kill him with linn-wood pillows, or shoot their arrows in the monster's arm-pit. The Indians are reported, one day, to have discovered a giant woman sleeping along the shore of a lake; they had detected her, in fact, by the ripples on the surface of the water caused by her breathing. When a large party of warriors slew her by means of linn-wood pillows, the shore of the lake was strewn with the large flint scales that covered her body.² In another story a giant woman is reported as having walked on the bottom of a river instead of swimming. Upon reaching the shore, she spat on an axe forgotten there by an Indian, thus unconsciously making it magical, in such a way that it could pulverize large boulders at one blow.³ These monsters were cannibals, and in the old time it sometimes happened that the terrified Indians would take their flight to the woods on having detected the presence of a giant in their neighborhood. The fingers of their human victims were the charms that the *Strendu* used to detect the presence of other Indians, as is shown by the following extract from a legend:⁴ "The *Strendu* knew that some people were to be found there, as she could smell them. She therefore placed a human finger on the palm of her hand, and whispered, 'Where are the people?' and at once, the finger stood straight up, pointing to the tree in which a man had hidden. The giant, however, did not believe the finger, and said, 'I have never known of any people living up in the sky. . . .' So she threw the finger away, thinking that it had been spoilt and was no longer good for anything." The fate of these giants is a mystery to the modern Wyandot. They are still living somewhere, so it is believed. An old informant⁵ thought that they must be in the east, "where the Indians originated," for "nobody knows what they have now become."

¹ Connelley, *Wyandot Folk-lore*, p. 91.

² Informant, B. N. O. Walker.

³ Informants, Catherine and Allen Johnson.

⁴ Informants, Catherine and Allen Johnson.

⁵ Catherine Armstrong, Wyandotte, Oklahoma.

II

The sky gods, *Hamendiju*, Sun and Moon, and the Thunderers, occupy a prominent place in the pantheon of all the Iroquoian tribes, and, indeed, with the exception of *Hamendiju*, they appear in some form or other in the mythology of a large number of American peoples.

Hamendiju (in Wyandot), or *Hawenniyu* (in Iroquois), is the chief deity of the modern Huron and Iroquois. His name may be translated literally "His-voice-is big or powerful," and it may be interpreted "He is a great chief." There seems to be little doubt that this is a name coined by the natives for the God of the white man; although some of the present-day informants readily accept that "the Great Spirit," *Hamendiju*, is one of their aboriginal deities.¹ In fact, the name of *Hamendiju* or *Hawenniyu* is, so far as we are aware, unknown in the narrations of earliest missionaries and explorers. When they mention the highest or most popular Huron or Iroquois divinity, their terms refer, in most cases quite evidently, to the Good One, as described in the cosmogonic myths, or to the Sun and to *Areskwi*.² Father Brébeuf, for instance, relates that the Huron "had recourse to the Sky in almost all their necessities"; "for they imagine in the Heavens an Oki, that is to say a demon or power which rules the seasons of the year." When the Sky is angry with them, as it often happens, "the flesh of a dead man is the victim" which they immolate in order to appease the Sky.³ Another missionary states that a great magician, consulted on the subject of the coming harvest, had answered "that it was necessary that everyone should go every day to his field, throw some tobacco on the fire, and burn it in the honour of the Demon whom he consulted, calling aloud this form of prayer, 'Listen, O Sky! Taste my tobacco; have pity on us' . . ."⁴ It is quite clear that the so-called Oki or Demon thus spoken of was no

¹ Miss Mary McKee (Anderdon, Ont.); Star Young (Wyandotte, Okla.).

² *Areskwi* is apparently an ancient name for the same cosmogonic god among some Iroquois tribes. Cartier noted, perhaps erroneously, that Cudwagny was the name of the supreme being of the natives found at Hochelaga (supposedly the Mohawk.)

³ *Jes. Rel.*, 1636, vol. x, pp. 159, 163, 165.

⁴ *Jes. Rel.*, 1643, vol. XXIII, p. 55.

other than the Good Twin of the cosmogonic myths to whom are ascribed the regulation of the seasons and the growth and ripening of the cereals and fruits of the earth.

In the modern Wyandot beliefs, Hamendiju is the "Almighty" or "Great Spirit" dwelling in the sky¹ and controlling the whole world. "He is the Great Man above," explained an old informant;² "He has all the powers, and he rules over many spirits who obey his commands." His chief assistant is Hino, the Thunderer.³ In recognition of his benevolent nature and of his daily favors to mankind he is prayed to and worshiped, in the course of periodical and special rituals, performed in public, and accompanied with the burning of Indian tobacco as incense, and certain motions of the hand toward the sky. Among the thanksgiving rituals in his honor, the Green Corn feast, taking place in August, has long occupied an important place. Several private and semi-private rituals are addressed to him on several occasions, namely, before starting for the hunt or when gathering medicinal plants. It is interesting to note that while Hamendiju is often directly prayed to, in the modern formulas used when plucking up medicinal or magical plants, various terms of relationship are also used to address him, such as "Cutá'a" (term including male and female ancestors, and generally translated "grandfather" or "grandmother" by the natives), and *Somaj'iste*, "our father."⁴

The chief deity of the modern Iroquois is also known under the name of Hawenniyu or Rawenniyu, and he is, in several places, described as the Good Twin who, with his brother, created the world.⁵ The Handsome Lake doctrine⁶—which has swayed most of the unchristianized Iroquois, during the last century—accepts Hawenniyu as the "Almighty" and also lays much emphasis on

¹ Smith Nichols, Catherine Johnson (Wyandotte, Okla.); Mary McKee (Anderdon, Ont.); and others.

² Star Young (Wyandotte, Okla.).

³ H. Hale, "Huron Folk-lore," in *Jour. Am. Folk-Lore*, vol. iv, pp. 293-294.

⁴ Catherine Johnson and Mary Kelley; Smith Nichols and Allen Johnson; Star Young; and Mary McKee.

⁵ L. H. Morgan, *League of the Iroquois* (1904 ed., by H. M. Lloyd), p. 147. A. C. Parker, "Iroquois Sun Myths," *Jour. Am. Folk-Lore*, vol. xxiii, pp. 474-478.

⁶ Morgan, loc. cit., p. 217ff., and A. C. Parker, "The Handsome Lake Code," *Bulletin New York State Museum*, No. 163.

the existence of an Evil Spirit, along the lines suggested by Christian theology. Both in their public and private rituals they address Hawenniyu, thanking him for his favors and praying to him for their continuance.¹

Among the foremost deities of the ancient Iroquoian religion were the Sun and the Moon. To the Wyandot they were human-like beings, gifted with extraordinary powers, as we have seen above. The Little Turtle, appointed by the council of the pristine animals, had made the Sun out of lightning and had given him the Moon to wife. They were both meant to shed light in turn upon the "Island" and in the Underworld. The Stars were said to be their children; and, among the favorite constellations were the Pleiades, supposed to be their "six little girls, the daughters of a single birth."²

The Sun—although still remembered among the Lorette Huron³ as the chief of the old-time spirits—does not seem to have been granted so high a rank in the Wyandot rituals as in those of the Iroquois. Besides the alleged confusion of the Sun with the Good Twin, and the Moon with his grandmother, there is nothing to show that among the ancient Huron the Sun and the Moon enjoyed any marked form of worship.

The Iroquois lore about the Sun and the Moon is far richer and more confused. Several traditions have come down to us regarding their mythical origin and function. Teharonyawagon, the Good One of the Twins, is said⁴ to have made the Sun while he was preparing the island for mankind, and later to have rescued him from the thievish hands of his evil brother who had captured him. The old woman appears, in another version,⁵ to have "cut off the head of her daughter and affixed it to the top of a tall tree, where it became the Sun, and, in like manner," to have "affixed the body which became the Moon." "At a later period," it is further al-

¹ Mr F. W. Waugh has collected for the Anthropological Division of the Geological Survey of Canada many formulas used in gathering medicinal plants, in which Hawenniyu is directly addressed and prayed to.

² W. E. Connelley, *Wyandot Folk-lore*, p. 109.

³ Informant, Rev. P. Vincent (Lorette, Q.).

⁴ J. N. B. Hewitt, in *Proc. Am. Assoc. Adv. Sci.*, 1895, pp. 241-242.

⁵ Hewitt, *ibid.*

leged, "these two luminaries were placed in the Sky." In a sun myth¹ it is related that the Good One made the Sun out of the face of his deceased mother. There is still the following explanation given as to the origin of the sun: In the sky-world, a chief ordered, one day, that the "light-giving celandine tree" should be uprooted; an opening to the sky thus resulted, and it is claimed that the Sun, after the fall of the Woman from the sky, has since been shining through it.² In a fragment of the Iroquois cosmogony,³ the Sun is seemingly acknowledged, moreover, as the father of the Good and Bad Twins; and the grandmother, speaking to the Good-minded said,⁴ "Now you must go and seek your father. When you see him you must ask him to give you power." Pointing to the east, she said, "He lives in that direction. You must keep on until you reach the limits of the island; and when, upon the waters, you come to a high mountain rising out of the sea, you shall climb to its summit, and you will see a wonderful being sitting on the highest peak. You must say, 'I am your son!'" And the context, according to Mr A. C. Parker, shows the Sun to be the "wonderful being." The Sun is often represented as the witness of all human deeds, and as a war god, to whom the warriors return thanks for their victories.⁵ Father Bressani, made prisoner by the Iroquois in one of their encounters with the Huron, has recorded that the Iroquois, after their victory, "rendered thanks to the Sun, . . . which they believe to preside in wars."⁶ Certain adventurous young men are elsewhere reported⁷ to have traveled far westward and followed the Sun into the other world, as he passed under the western sky's rim. In the other world, they met "a person of great size,"⁸ that is, Hawenniyu. Then the brothers saw a messenger running toward them "with a

¹ A. C. Parker in *Jour. Am. Folk-Lore*, 1910, vol. xxiii, pp. 474-478.

² Hewitt, loc. cit., p. 245.

³ A. C. Parker, loc. cit., being an extract of Esquire Johnson's version, recorded in manuscript by Mrs A. Wright, in 1876.

⁴ Mr Parker's text is followed here almost verbatim.

⁵ Parker, *ibid.*, p. 478, and others.

⁶ Bressani, *Jes. Rel.*, vol. XXXIX, p. 185; also Vimont and Lalemant, *Jes. Rel.*, vol. XXVI, p. 69.

⁷ In Mr A. C. Parker, loc. cit.; informant E. Cornplanter; and in manuscript version recorded by Mr F. W. Waugh (informant Chief J. Gibson, Grand River, Ontario).

⁸ In F. W. Waugh's version.

brilliant ball of light upon his wide chest." And Hawenniyu explained, "He is the Sun, my messenger. Every day he brings me news (from the earth). Nothing from east to west escapes his eye."¹

There was evidently no orthodoxy among the Iroquoian peoples regarding the nature of the sun and the moon. Their high mythological importance, however, is clearly revealed in the traditions and also in the Iroquois sun and moon rituals. The divergences of opinion on their origin and function are, no doubt, partly due to the fact—already pointed out by Mr Parker²—that the Iroquois adopted, in the course of their wars, the remnants of several conquered tribes and assimilated their traditions. But it should not be forgotten that the sun is one of the foremost characters in the religion of many American tribes at large, especially in the West and Southwest. As it is more than likely, moreover, that the Iroquoian peoples formerly migrated from middle North America, and perhaps from the Southwest, their sun worship may turn out to be an ancient legacy which their modern thinkers have attempted, independently and without perfect agreement, to explain in their etiological myths.

The Sun dance—generally called "War Dance" by the Oklahoma Iroquois, although not quite appropriately³—is one of the fundamental Iroquois feasts. And the "Blackberry feast" is a ritual in honor of the Moon, held at the first full moon of July, and performed at night.

The Sun ritual, still performed on several Iroquois reservations, is fairly well known to ethnologists.⁴ It was explained⁵ to the writer, after having witnessed a Sun feast among the Oklahoma Seneca and Cayuga,⁶ that the "dance" was intended as a returning of thanks to the Sun, whom they worship and call *Setwé'ts'a*,

¹ Almost verbatim from A. C. Parker's "Sun Myths," loc. cit.

² Parker, *ibid.*, p. 478.

³ James Logan, the Cayuga head-chief of the Oklahoma Seneca and Cayuga (whom I utilized as informant), was emphatic in his assertion that the so-called "war dance," performed in September, 1911, was really a "Sun dance."

⁴ Morgan, loc. cit., p. 175ff., and p. 268ff.; Mrs E. A. Smith, "Myths of the Iroquois," B. A. E. Rep. II, p. 114; A. C. Parker, loc. cit., p. 473.

⁵ By the Cayuga head-chief, James Logan, and his wife.

⁶ In September, 1911.

"our brother." "We speak to the Sun as if he were a spirit, and," added the informant, "the spirit is in the Sun in some way. Therefore we thank him for having given the Sun the power to protect us, and to cause all the plants to grow." The sacred Sun emblem and other paraphernalia are used by the dancers, who proceed from the east to their dancing grounds, and make their exit westward when the dance is finished. In the course of the same feast, the Sun, the Moon, the Thunderer, the Manitous, and the Earth are prayed to and requested to continue their favors, and to grant everybody life and good luck until the next Sun feast. In former times this ritual used to take place twice a year, in the spring and in the autumn.¹

The Moon feast, also called "Blackberry dance" by the Oklahoma Iroquois, is held at night on the first full moon of July, when the blackberries are ripe. It is meant as a form of worship and a thanksgiving ritual to the moon, whom the informants called *Ed'sut*, "our grandmother," for her favors in shedding light at night, causing the dew and bringing the plants and cereals to maturity. It was also claimed by the same informants that this was mainly a woman's dance, on account of the moon being a woman and the grandmother of all the children born in this world.²

One of the most popular gods of the Iroquoian pantheon is Heng, the Thunderer. His personality, in fact, is well defined and his attributes appear to be almost uniformly the same throughout the various Iroquois and Wyandot myths.

His mythical origin seems to be more ancient than that of any of the other great deities above described. It is accounted for in a Wyandot myth, which may be summarized as follows:³ Heng was one of seven brothers seemingly living in the sky-land,⁴ long ago.

¹ This information was obtained from James Logan and his wife, or noted down directly by the writer.

² One of these feasts was witnessed by the writer at Seneca reservation, Oklahoma, in July, 1912, and later studied with the informants James Logan and wife.

³ Informant B. N. O. Walker, Wyandotte, Oklahoma. Recorded by myself in 1911.

⁴ That they lived in the sky-land is simply inferred from the fact that Heng is stated, in all the cosmogonic traditions, to have accompanied the Woman into the water regions, when she fell from the sky.

So exuberant with life and boisterous was he that his brothers were much worried about him, and even dreaded the idea of exciting his anger, lest he might indulge in rash and terrible deeds and destroy them all. He was so strong that, without even noticing it, he would smash things to pieces. One day, having decided to get rid of him, they brought him along into a remote island where they pretended to hunt deer. When Henq had taken his stand in a dense forest whither he expected his brothers to chase the game, they ran back to their canoes and left him there, all by himself. He soon realized their deceit, but accepted his fate without a grudge, as he was always jovial and good-natured. His voice, however, resounded like peals of thunder, as he called his brothers. Forgetting his grief, he promised them, in the end, that he would never do any harm to them and their people; but that, from time to time he would raise his voice and remind them of his presence on the island. In fact, he is believed to have stayed there to this day, roaming about a part of the year, and sleeping in the winter time. When a peal of thunder is heard in the winter, some Wyandot may still be heard saying, "Henq is turning over; something must have disturbed his nap!"

In the Wyandot and Iroquois cosmogonic myths Henq appears as the god of thunder and lightning. In the Wyandot myths it appears that when the Woman fell from the sky into the lower water-world, a mighty peal of thunder, the first ever heard in these regions, startled the aquatic animals. The Woman was then seen "clad in a bright flame of lightning." She was accompanied in her fall by Henq, the God of Thunder.¹ When, later, the council of the animals had decided that luminaries should be made to light the earth, Little Turtle climbed into the sky with the help of Henq and made the sun and moon out of lightning.² On several other occasions, in the course of the mythic ages, Henq and Little Turtle are found closely associated; for instance, in the epic war against the giants, Little Turtle said, "I can make a great fire from the lightning." So the warriors and Little Turtle crept all around the giants'

¹ W. E. Connelley, *Wyandot Folk-lore*, pp. 44, 77; and in Walker's version.

² Connelley, *ibid.*, pp. 44-46, also in *Jour. Am. Folk-Lore*, xii, pp. 118-119; and Walker.

camp. The Turtle brought forth the thunder; and lightning leaped into a great wall all about the giants, crushing them to the earth.¹ And the Pleiades maidens, having one day deserted the sky for the earth, were brought back to their former abode by Little Turtle riding on a cloud, accompanied by Henq.² Before the animals had passed from the Island into the sky, it came to the Deer that he should be concerned with the celestial affairs. He therefore requested the Rainbow to convey him into the sky by means of his broad pathway of colors,³ but it is said that the Rainbow would not do it without consulting the Thunder about the matter.⁴ It was related that Henq assisted the deceased Sky-woman, when she was in charge of the Wyandot, as they were sleeping in the Underworld, just before their dispersion on the island.⁵ Tse'sta, having called his people forth from the Underworld, showed them to the opening of the great cavern. While they were for the first time glancing over this world, a peal of thunder shook the air and frightened them all.⁶ They were told, however, not to fear, for Henq would never cast his thunderbolts on a Wyandot. And it is still a firm belief among them that, being the privileged people of Heno, they may never be struck by lightning.⁷

Henq's manifold personality and function are described in a number of myths and legends of the Wyandot and Iroquois. Although primarily the Thunder god, whose powers are destructive, he is everywhere known as the real providence of the Iroquoian people. In his care are intrusted the clouds, with which he waters the earth; and he is believed, in fact, to cast his thunderbolts only at the enemies of the people—the monsters, witches, and evil-doers. For the fulfilment of his many functions, he is assisted by many subordinates, generally said to be his sons. Both as Thunder deity and rain-maker or God of vegetation he is worshiped and con-

¹ This incident is quoted almost verbatim from Connelley, *Wyandot Folk-lore*, p. 86.

² Connelley, *ibid.*, p. 110.

³ Walker's version.

⁴ Connelley, *loc. cit.*, p. 77.

⁵ Connelley, *ibid.*, p. 82.

⁶ Connelley, *ibid.*, p. 83; and Walker.

⁷ Informant B. N. O. Walker.

sidered as good-natured and benevolent; and the vocative "grand-father" is the term by which he is generally addressed in prayers.¹

His physical appearance, according to some Iroquois authorities,² is that of a human being, dressed as a warrior, and wearing upon his head a magical feather by which he is made invulnerable. Upon his back he carries a basket full of fragments of flint rock, to be flung at monsters and witches. In the less abundant Wyandot evidence we find Henq and his assistants "dressed in cloud-like garments, with wings on the shoulders," and floating in the clouds.³ True enemy of the monsters—the *ukis*—and their human confederates, the witches and sorcerers, Henq destroys them whenever he happens to detect their presence.⁴ That is why the *ukis* are said seldom to venture out of their caverns or their hiding places in the ground. Many incidents illustrating Henq's fury against monsters are found in literature, namely: Long ago the annual recurrence of a terrible pestilence, caused by a huge serpent dwelling under the ground, was the scourge of an Iroquois village situated at the place where Buffalo now is. Henq, out of compassion for the people, finally decided to slay the serpent. While the monster was in a creek near the village, "Henq discharged upon [him] a terrific thunderbolt which inflicted a mortal wound. . . . Before he succeeded in reaching the lake, the repeated attacks of the Thunderer took effect, and the monster was slain. . . . The huge body of the serpent floated down the stream, and lodged upon the verge of the [Niagara] cataract, stretching nearly across the river. . . . The raging waters thus dammed up by the body broke through the rocks behind. . . . In this manner . . . was formed the Horseshoe Fall" of the Niagara.⁵

¹ For the Wyandots: H. Hale in *Jour. Am. Folk-Lore*, iv, p. 292, Mary McKee and others (information collected by myself); for the Iroquois: J. N. B. Hewitt in *Proc. Amer. Assn. Adv. Sci.*, 1895, pp. 249-50; Mrs. H. M. Converse in *Bull. N. Y. State Museum*, No. 125, pp. 39-42.

² Morgan, loc. cit., p. 149; Converse, loc. cit., pp. 39-40.

³ H. Hale in *Jour. Am. Folk-Lore*, iv, 292-293.

⁴ Morgan, loc. cit., p. 149; Hewitt, loc. cit., pp. 249-250; Smith, loc. cit., pp. 52-54; Converse, loc. cit., p. 39.

⁵ Extracts quoted from Morgan's version, loc. cit., pp. 150-151; also recorded by Mrs. E. A. Smith, loc. cit., pp. 54-55; Mrs. Converse, loc. cit., pp. 39-42, and Minnie Myrtle, *The Iroquois, or The Bright Side of Indian Character*, p. 133; and referred to by Connelley, *Wyandot Folk-lore*, p. 44, as also found among the Wyandot.

In a legend recorded among the Wyandot of Detroit,¹ it is related that the Thunderer one day appeared to a young hunter, advising him that his old protector, for the benefit of whom he was hunting, was really a monster disguised as a man. Heng added that his own mission was, with the help of his assistants, to "keep the earth and everything upon it in good order for the benefit of the human race"; and, "if there were serpents and other noxious creatures," he was commissioned "to destroy them." So the young Indian lured his protector out of his subterranean dwelling. The old fellow, who did not like to go out, "bade the youth examine the sky carefully, and see if there were the smallest speck of cloud in any quarter." While the cave man was still in the woods, the thunder rumbled at a distance, and a cloud appeared. The old man ran away; but as the thunder sounded nearer, he became an enormous Porcupine. "But the Thunderer followed him with burst upon burst and, finally, a bolt struck the huge animal, which fell lifeless in its den."² Then Heng told the young man that the great deity, Hamendiju, had given them authority to watch over the people and see that no harm came to them.³

The Thunder revealed himself as the guide and protector of the Wyandot in some of their wars. Sayentsuwat, a famous war chief of ancient times, is said to have heard the steps of the Thunderer coming toward him at night while he was leading a war party against the Cherokee. Heng spoke to him, and said, "Are you not wondering about the manner of attracting your enemies out of their rock caverns?" Sayentsuwat replied, "Yes!" and the god said, "You must be near their caverns and ready for the attack when the sun goes down." So it happened, and, at sunset, clouds arose in the sky and loud blasts resounded. The Thunderer, in fact, drove all the Cherokee out of their cave dwellings; and, as they were running toward a hill, he destroyed them all. Thus Sayentsuwat had won the battle with the help of his "grandfather," Heng.⁴

¹ H. Hale, in *Jour. Am. Folk-Lore*, IV, pp. 290-292.

² *Ibid.*

³ *Ibid.*, p. 292.

⁴ War adventure recorded in text by myself in 1912; informant Catherine Johnson, Wyandotte, Oklahoma.

The Thunder is also a god of vegetation, to whom the Iroquoian Indians considered themselves indebted for rain.¹ A young Wyandot was formerly believed to have learned from the Thunder god himself the secret art of rain-making, which he communicated to several persons. These human rain-makers, bound to strict secrecy, were popularly known to produce rain whenever it was needed. Not very long ago, one of the Detroit Wyandot claimed that he had once become partly possessed of this secret.²

Henq has many assistants, generally stated to be his sons, who help him in the fulfilment of his many functions. Three young men, according to Wyandot myths, appeared with him, on at least two different occasions, to Indians who needed his protection against monsters.³ An informant further remarked⁴ that only three Thunder deities were required on one of these occasions, but that there are many of them; and that when the thunder is heard rolling in many parts of the sky it is because several of them are at work. On the other hand, some Iroquois traditions are to the effect that Henq has only two assistants, one of whom is half human and half divine.⁵

One of the Thunderers, named Tsijutq'q, was long ago born from a Wyandot woman and one of Henq's subordinates. This Wyandot myth,⁶ briefly stated is as follows:

A beautiful Wyandot young woman was in the habit of scorning her suitors. One day she became the bride of a handsome young man, who brought her into his remote country. He was, in fact, but a metamorphosed monster Snake; and, to her great awe and disappointment, she soon realized it. As he went out hunting the young woman took flight in a northerly direction. Her husband chased her and caused the water gradually to rise all about the

¹ Morgan, loc. cit., p. 149; Smith, loc. cit., pp. 54-55, 72-73; Hewitt, loc. cit., pp. 249-250; Converse, loc. cit., pp. 39, 42.

² H. Hale, loc. cit., IV, p. 293.

³ H. Hale, loc. cit., p. 292; Catherine Johnson and Smith Nichols, Oklahoma Wyandot informants, 1911-1912.

⁴ Chief Joseph White to H. Hale, loc. cit., pp. 292-293.

⁵ Morgan, loc. cit., p. 150; Converse, loc. cit., pp. 39-42.

⁶ Recorded in text by myself, in Oklahoma; informants, Catherine and Allen Johnson.

fugitive woman, so that she might not escape. But as she perceived several men standing at a distance, she heard their chief shouting to her, "This way! Come and stand behind me! I shall defend you against him!" And he spoke to his men, saying, "Shoot right there!" So it was done, and the big Snake was destroyed. When the smoke dispersed, the young woman was taken along by her protectors, Heng and his three sons, into their country; and she became the wife of one of the younger Thunderers. As she was constantly longing, however, to visit her mother, the chief Thunderer consented to show her "the way down to her mother's home." She brought her son along with her, but she pledged herself to take the utmost care of him and never to allow him to quarrel with his human friends, for fear that he might draw his bow at other boys and thus kill them outright. The child grew fast, and in his fourth year he could play with the other boys. It happened that once he drew his bow at his friends who had annoyed him. A peal of thunder resounded, and his father at once appeared to the Wyandot woman, saying, "I have now taken him along with me, and whenever it rains while the sun is shining, the people shall think and say that Tsijutq'q, the Wyandot, is making the rain. And it was the common saying, among the old people, that Tsijutq'q, the son of the Thunder and the Wyandot woman, was responsible for the sun shower."¹

The Thunderers were formerly worshiped and prayed to by all the Iroquoian peoples. Among the Iroquois proper, the worship of Heng is both public and private. In the Onondaga annual Planting, Strawberry, Green Bean, Green Corn, and Thanksgiving feasts, one day used to be dedicated to Heng.² In the Green Corn ritual of the Oklahoma Cayuga¹ and Seneca,³ "Grandfather Thunder" is still prayed to and requested not to injure any of his people with lightning or hail, and not to pour too heavy rains.⁴ Among the Seneca, "a special ceremony, called *Wesaze*, is held every

¹ Informant, Allen Johnson, Wyandotte, Oklahoma.

² Beauchamp, "Onondaga Customs," in *Jour. Amer. Folk-Lore*, vol. 1, p. 200.

³ As well, presumably, as in those of other tribes.

⁴ Chief James Logan, Seneca reservation, Oklahoma; information collected by myself, in 1912.

spring in honor of the Thunderer." The dance is called when the thunder is first heard in the spring; and, after the first dance a thanksgiving speech is recited, followed by a war dance.¹ A ceremony was occasionally held by the Iroquois in a dry season, with the intent of bringing rain. When the rumbling of thunder was heard from a distance, heralds at once notified the people that the sons of Henq were in their neighborhood, that each family should first make a private offering of tobacco to these deities, and then gather in the council-house for a public offering of tobacco and a Rain dance.² It is still remembered among the Wyandot of Anderton, Ontario,³ that during an electric storm some of the old people would place upon a stump a pipeful of Indian tobacco ready for smoking, and utter the formula, "Grandfather, many thanks to you!" This ritual, termed "treating Grandfather with a pipeful of tobacco," was considered as a sure preventive against danger from lightning.

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¹ Converse and Parker, *Bull. New York State Museum*, No. 123, pp. 39-42.

² Mrs E. A. Smith, loc. cit., pp. 52, 72, 73.

³ Miss Mary McKee; information collected by myself, in 1911.

THE CULTURAL POSITION OF THE PLAINS OJIBWAY

By ALANSON SKINNER

AS a whole the Ojibway Indians are a strictly forest-dwelling people, possessing all the various traits of woodland culture. Along their western border, however, the lure of the buffalo herds, and later the persuasions of the traders, induced many of the tribesmen well out on the plains. Here a number may still be found, principally on reservations in Manitoba, Saskatchewan, and North Dakota. They are generally called *Saulteaux*, but some bands, at least, denominate themselves as "Bûngi" and consider themselves as distinct from the Ojibway by reason of long separation. Whether or not the Bûngi form a separate group from the *Saulteaux* is not yet certain, but the name is relatively an old one, and there is some evidence that a difference exists. The data here presented were gathered principally from the Bûngi of Manitoba during the summer of 1913.

During the sojourn of these Indians on the prairies the original culture of the Bûngi has been somewhat modified, and in order to ascertain to what extent changes have taken place, we will pass over in a concise review the main features of the culture of the two areas involved, the Plains and the Woodlands.

In a paper read before the Congress of Americanists at Quebec in 1906, Dr Wissler¹ noted the principal characteristics of the first group as follows:

1.—The almost complete dependence upon the flesh of the buffalo for food: the curing of this flesh and afterwards pounding it fine and storing it in bags known as *parlèches*.

2.—The almost exclusive use of a tent, made of buffalo skins stretched around a conical frame-work of poles. This tent is generally known as a *tipi*. In formal gatherings, these tents are arranged in a large circle known in ethnological literature as the "camp circle."

¹ Diffusion of Culture in the Plains of North America, *Congrès International des Américanistes*, XV Session, tome II, p. 39. Québec, 1906.

3.—The use of the dog travois for the transportation of tents and personal property and later the adaptation of the same instrument to the horse. The only water transportation typical of this area was by raft or the bullboat, used exclusively for ferrying.

4.—The almost entire absence of weaving, either of cloth or of basketry, and the very limited use of pottery. The chief industry of the women was work in skins.

5.—The use of the circular shield made of buffalo skin, the elaborate spreading head dress of eagle feathers, and the decorated shirt, usually fringed with hair, characterized their military life.

6.—The ceremonial organization and religious life was characterized by the Sun Dance, the worship of the Buffalo, the medicine-bundle and military societies having a progressive relation to one another.

7.—The decorative art, confined almost exclusively to painting upon raw hide and embroidery in quills or beads, is peculiar in the use of few rectangular and triangular designs, for the composition of complex figures.

In a similar manner the main points of Forest culture may be noted, taking for our purpose the Central Algonkin, and noting that nearly all the features to be mentioned are found among some group of the Ojibway proper.

1.—Hunting and agriculture almost of equal importance in gaining sustenance. Buffalo of no consequence as food, since they were too far away. Wild rice an important commodity. Trunk-like parfleches different in type from the flat folding form found among some of the tribes of the plains. Birch-bark baskets and woven bags generally used as receptacles.

2.—Round dome-shaped wigwams made of bark or bullrush mats in summer, square bark houses in winter. Conical bark tents to the north. Camp circle unknown.

3.—Bark and dugout canoes used for transportation; neither the travois nor bullboat found.

4.—Sashes, bags, and quillwork woven; to the north, rabbit-skin blankets and garments. Pottery good and abundant. Industries of the women varied.

5.—Roach, or fur fillet headdress. Women's garments in two pieces. To the north the Ojibway women wore a gown with separate sleeves. Soft-soled moccasins.

6.—Military life characterized by the use of war bundles. No graded military societies, but those who had achieved war honors, either men or women, became members of a warrior class for life.

7.—Religion was characterized by a complex pantheon. No Sun dance; the Midéwiwin, or Medicine Lodge Society, and the Wabano and Jesako cults important. Picture writing on birch-bark and wood connected with religion.

8.—Decorative art more inclined to conventionalized flower forms.

9.—Scaffold burial unusual; the dead were mostly interred. Ceremony at grave when warriors count coups, that the spirit of the deceased may be properly attended on the journey to the hereafter.

Now let us examine the Bûngi. Knowing their supposed origin and antecedents we must expect that they originally formed a unit of Forest culture, now exchanged for or intermingled with that of the Plains.

In the case of the first group of cultural traits we find the Bûngi formerly almost completely dependent on the buffalo; they harvested wild rice very little if at all, and they practised agriculture. On the other hand, we must not be misled by the last fact, for there are Indians yet living who claim to remember the introduction of maize from one of the village tribes of the Missouri. Both the box and the flat folding type of *parflèches* were used, and likewise woven bags of the typical Central form.

In the case of the second set of traits we find the Bûngi used the buffalo-hide tipi almost exclusively, but that the conical bark wigwam was still retained occasionally. The camp circle was always used when any band was assembled.

Now the travois is one of the most typical means of transportation among the Plains tribes, and it has been shown that the canoe, either dugout or of bark, is typical of the forest peoples. The Bûngi possess the travois (not only the dog but the horse contrivance), and the dugout canoe as well. They do not use the bullboat, although they have seen such craft on the Missouri.

While the art of weaving was absent from the Plains, the Bûngi

for a long time retained it, though it is obsolescent today. Bags of bark twine, reed mats, and rabbit-skin garments were all made, and a few examples are yet to be seen. Pottery they claim to have had, but evidence as to whether they made it themselves, or not, has not yet been gathered.

The round bull-hide shields of the Plains were made and abundantly used, and while no data could be found relative to the use of the elaborate Plains warbonnet, the roach and the fur fillet were found. The women's dress was of the Northern Central type—a gown with detachable sleeves. Soft-soled moccasins were commonly worn, but those with hard soles were by no means unknown.

The two religious ceremonies, which seem to have been nearly equal in importance, were the Sun dance and the Midéwiwin. The cult of the Jesako, though not of the Wabano, was found. The Bûngi possess the regular complex Central Algonkin pantheon.

Their military life lacked the progressive age-societies of the Plains, but had the permanent warrior system of the Forest, by which a man, a woman, or a child performing a brave deed, automatically became a warrior for life. The soldiers' lodge was erected in every band or tribal camp, and there the qualified braves resided with the chief. Apparently war and other medicine bundles were unknown.

In their decorative art the Bûngi thoroughly mix the flower designs of the Forest with the geometric figures of the Plains. They practised picture-writing on birch-bark which characterizes the Woodlands, and once used painted buffalo-robcs.

While they once employed the scaffold burial, according to tradition, they now inter their dead. They erect a lodge over the grave for the accommodation of the ghost, and perform all the typical funeral rites of the Central Algonkin area.

Their folklore, so far as recorded, is almost entirely that of the Forests, but a few Plains elements occur.

One feature, shared only with the Plains Cree and the Assiniboine, with whom the Bûngi were always associated, is a clown ceremony. This is gotten up by a man who has dreamed the rite.

A tent is erected in the camp circle for the exclusive use of the clowns. They exorcise demons from the sick, dress grotesquely, wear masks, use inverted speech, beg tobacco at dances, have a ceremonial hunt of a ridiculous sort, and perform many ludicrous rites and antics. There is more than a possibility that the Bûngi derived this custom from a group of Iroquois domiciled near them on Red river as early as 1790. Mr Arthur C. Parker informs me that nearly all these features are duplicated in certain Iroquois ceremonies.

While other facts could be adduced to show the commingling of Plains and Forest culture among the Bûngi, the summary here given is sufficient to prove the point. To conclude, let us say that the Bûngi, traditionally of recent advent into the Plains area, entered the region fully equipped with Woodland culture. Under constant pressure from outside sources, their culture has been influenced at every point, their religion and folklore perhaps suffering the least change, although they have adopted the Sun dance, and some elements of the folklore of the Plains. Thus it will be seen that not only has the strictly rational and material side of their life been affected, but that their religion, social life, and government have also been modified. As they stand today they present a perhaps unparalleled example of mixed culture—almost half and half. Had not their development been arrested by the influx of white settlers and the annihilation of the buffalo, their further progress would have been an interesting problem, the solution of which is probably to be traced by successive steps through the Plains Cree and the Blackfoot.

AMERICAN MUSEUM OF NATURAL HISTORY
NEW YORK CITY

A PREHISTORIC STONE COLLAR FROM PORTO RICO

By J. WALTER FEWKES

IN the following pages attention is called to an unusual form of prehistoric stone collar found near Arecibo, Porto Rico. A detailed description of this object will be incorporated in a monograph which the author has in preparation on the Aborigines of the West Indies.

Attention was first called to this stone collar in the following lines of an article on Porto Rico Stone Collars and Tripointed Idols:¹ "Sometimes the projection is feruled, often with pits like eyes, and in one collar the prominence is said to have the form of a snake's head." To this is added the following note: "This specimen is owned by Mr Leopold B. Strube of Arecibo, who has sent the author a drawing which shows the knob in the form of a snake's head." This reference was later quoted in the writer's memoir on the Aborigines of Porto Rico.²

On a recent visit to Europe the author examined the specimen, now in Bremen,³ and made the drawings reproduced in figures 97-100. A glance at the first of these shows that it belongs to the type called by the late Professor O. T. Mason⁴ the "right-handed variety of the slender oval group."

This collar is made of a hard, light-gray andesite or diorite, with surface fairly smooth but not finely polished. Its general form is not unlike other examples of the slender ovate type. The special differences are found in the ornamentation of the decorated panel border and the modification of the projection or knob into an animal head. It measures 15 and 11 inches in greater and lesser diameters respectively.

¹ *Smithsonian Miscellaneous Collections*, vol. XLVII, pt. 2, 1904.

² *Twenty-fifth Annual Report, Bureau of American Ethnology*.

³ The author acknowledges with pleasure his indebtedness to Dr Johannes Weissenborn, Curator of Ethnology in the Stadliche Museum, Bremen, for the opportunity of studying this instructive specimen.

⁴ Latimer Collection of Antiquities from Porto Rico in the National Museum at Washington. *Smithsonian Report for 1876*.

The undecorated panel shows no exceptional features, except that the rim is pinched midway of its length into a triangular projection, as shown in figure 97, but which could be better seen from one side. A slightly raised band extends round the collar,

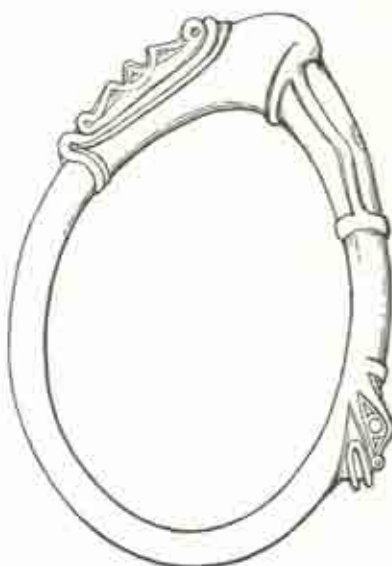


FIG. 97.—The Strube stone collar.
(Bremen Museum).

just below the so-called boss or elbow, joining the upper and the lower margin of the decorated panel border. As will be pointed out presently, the head carved on the panel border is very well made and instructive.

Lateral and dorsal representations of the knob modified into a head are shown in figures 98 and 99.

Before the author had examined the Strube specimen, he was of the impression, from sketches of the objects, one of which was kindly sent to him several years ago by Herr Strube, and the other by Professor W. H. Holmes, who saw the specimen in the Bremen

Museum, that the head replacing the projection or knob represents that of a serpent, but he is now able to point out a more striking resemblance to the head of some other reptile, a conclusion reached mainly from comparative studies of similar heads found in some of the three-pointed stone idols of the first type, figured elsewhere.¹

The three-pointed idols with heads like those of the Strube collar also possess legs, which would prohibit their identification as serpent idols and would weigh against acceptance of the opinion that the head on the collar represents a snake, were it not for the fact that primitive man is not always consistent in fashioning his images; hence the heads of both, even when furnished with limbs,

¹ *Aborigines of Porto Rico*, pls. XXXIX *a*, *a'*; XLI *b*, *c*; XLII *a*, *b*; XLIII, XLIII *a*, *a'*.

may represent some serpent monster, the iguana, or a reptile with the body and appendages of a turtle.

The modification in the projection in this collar, although less usual than other features, is not more instructive than the unique figures graven on the border of the decorated panels. The surface

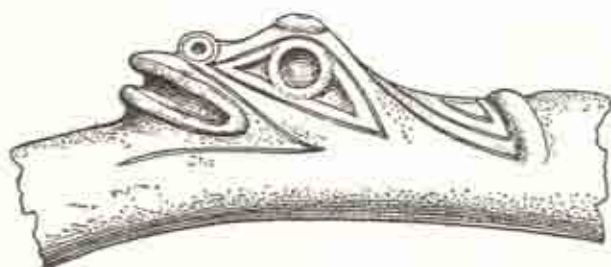


FIG. 98.—Lateral view of "knob" of the Strube stone collar (Bremen Museum).

of the panel is not exceptionally ornamented, but its border is sculptured into the form of a head with lateral appendages much better made than is generally the case.

The appearance of the head and legs on the panel border of this specimen (fig. 100) are as exceptional in form as the knob, for unlike



FIG. 99.—Dorsal view of "knob" of the Strube stone collar (Bremen Museum).

the heads cut on the panels of other slender oval collars the head of this specimen is in high relief. The relation of the head to the collar is here exactly reversed, as compared with that of almost all other collars, for the forehead adjoins the panel instead of being turned away from the decorated panel. The two lateral appendages extending along the border on the sides of this head are readily comparable with similar figures, in the same position, on other collars. A representation of the head and appendages as seen from below shows that the lower jaw is pointed and triangular.

The form of the decorated panel border of the Strube collar bears directly on our interpretation of this feature in other collars and sheds light on the meaning of certain conventionalized figures on other specimens in which the head form is not so evident as in this specimen, as may appear from the following comparisons.

The decoration on the panel borders of different stone collars falls naturally into a series passing from realistic to conventionalized figures, shown in the accompanying figures 101-107. In order to interpret these decorations, we may pass from the most complicated to the simplest form.

Commencing with the form shown in figure 101, representing a specimen now in the Heye Museum, we have a massive collar with a head cut in high relief on the surface of one side. This head (*h*) resembles those constantly found engraved on stone images or



FIG. 100.—Decorated panel and panel border of the Strube stone collar (Bremen Museum).

modeled in terra-cotta for handles of Antillean bowls or vases. It represents a being wearing a kind of Phrygian cap, with mouth half open, large eyes, and other features recalling a turtle or some reptile. Two arms (*pa*), with the elbows bent and showing the palms of the hands and the fingers, are well represented and rise from under the chin. The hands appear to hold up rings cut at the side of the head, which they touch on each side, and are interpreted as representations of ears or ear-ornaments. These rings recall the lower lobes of the ears in certain stone yokes found in Vera Cruz and other Mexican states. The umbilicus appears on the body just below the chin, and on each side are rectangular carvings (*d, p*), supposed to represent other parts of the body.

In the collar of the Heye collection (fig. 101) there is practically no separation of the panel border and the panel, or rather the former has extended over the latter, which remains as a rectangular design (*d, p*) filling the areas on each side of the anterior appendages (*a*) and below the problematical lateral extensions (*pa*).

Extending on each side of these rings on the upper margin of the collar there is an interesting conventional figure in relief, unlike a leg or any other part of the body, but which is seen constantly in modified form in other collars. In a general way this decoration (*pa*) consists of a distal portion, which is more or less angular and of cubical form with a median pit (*b*), and a proximal region con-

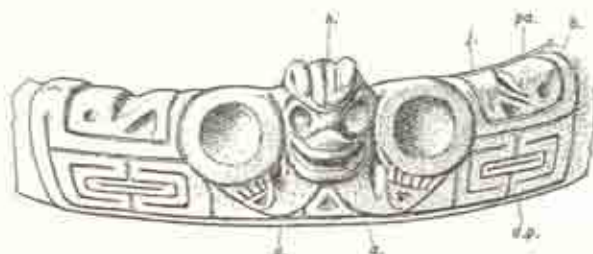


FIG. 101.—Panel of stone collar (Heye Museum).

nected by means of a knee-shaped relief figure (*j*), with the head and all other portions of the design. The parts represented in this carving are the head, forearms, ear-lobe or ornament of the ear, and a knee-like problematic body. Every organ except the last can be readily identified, but in order to determine the meaning of the knee-like member, we must consider similar relief designs on collars in other collections.

The ornate design on the panel border of the Strube specimen in Bremen naturally next claims our attention. In considering this example (fig. 100) it will be noticed at once that the mouth, eyes, and all other parts of the face are reversed when compared with the head of the collar in the Heye collection (fig. 101). This is due to the fact that its left side represents the right side of the Heye collar, as will be seen when these collars are laid with the decorative panels uppermost for comparison, in which case the lower jaw in the former is naturally below, while in the latter it is above, a re-

versal caused by one of these collars being right-handed while the other is left-handed. This does not prevent a comparison of similar parts in the ornamentation of the collar, but it must be borne in mind that they are in reversed positions.

We fail to discover on sides of the head of the Bremen collar any indication of those rings or ear-ornaments in relief that are so conspicuous in the Heye Museum specimen. There are likewise no homologues of arms and hands below the chin, but the lateral figures carved in low relief on each side are represented in somewhat modified form. Here occur representations of a joint (*j*) and the terminal circle with a deep pit (*b*), leading us to consider them the same organs. The panel is distinct from its border and has no sign of legs.

Passing to a consideration of a collar figured by Professor Mason and said to be from Guadeloupe, we discover on the decorated panel border a still greater simplification of the head which here (fig. 102)

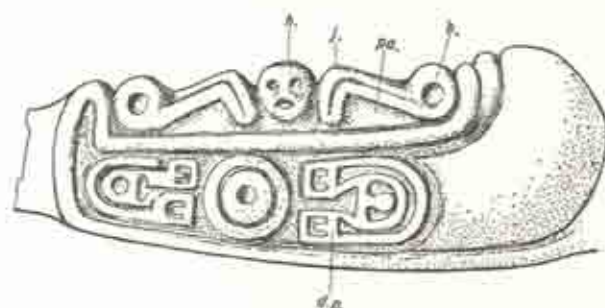


FIG. 102.—Panel of stone collar (Latimer collection).

appears as a circle (*h*), with eyes and mouth represented by shallow pits. The problematical lateral organs (*ja*) have here become simple scrolls, with a pit (*b*) in the middle of the distal end, a conventionalization which is paralleled by that shown in another design on the panel margin of a collar from the Latimer collection figured by Mason,¹ where the lateral appendages (*ja*) are reduced to scrolls, although the joint is still angular.

A similar decorated panel is found in one of the collars of the Latimer collection (fig. 103).

¹ Op. cit.

We pass now in our comparison to a collar (fig. 104) in which the face on the panel border is divided medially into two parts, and the remainder of the figures, especially the lateral scrolls, have undergone a strange elongation. The simple pits representing eyes still

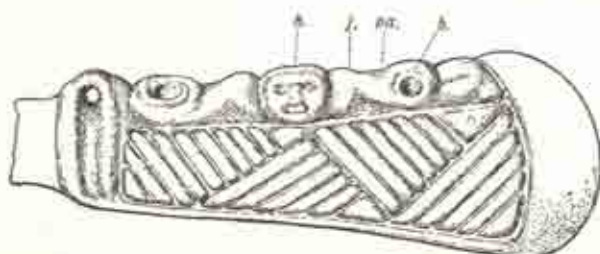


FIG. 103.—Panel of stone collar (Latimer collection).

remain, and each of the halves of the former head is continued into an extension curved into a scroll in which the only recognizable feature is the jointed organ.

Another variation in the figure on the decorated panel border (fig. 105) occurs in another of the Latimer collars. The vertical division between the eyes separating the face into halves has not

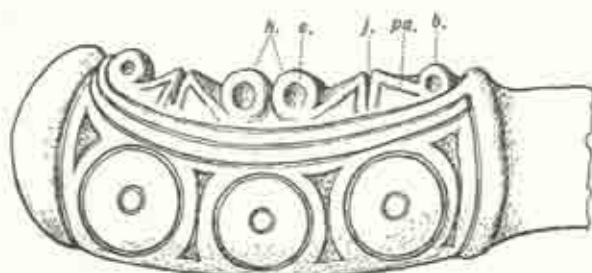


FIG. 104.—Panel of stone collar (Bremen Museum).

extended wholly across the head, and the forehead here remains undivided. The scroll-like lateral appendages (*pa*) that make up the remainder of the figure of the decorated panel border have no exceptional features.

In still another collar of the Latimer collection, the conventionalization of the panel border figure has proceeded so far that the resemblance to a head with lateral appendages is completely lost.

Here we have simply two scrolls with one extremity of each approximated and their distal ends widely separated and extended.

In another collar of the Latimer collection the decoration of the panel has been subjected to further modification in form, the panel figure taking the form of two rectangles representing the half-



FIG. 105.—Panel of stone collar (Latimer collection).

circles of the divided face, each bearing a pit representing an eye. The elbow-like scrolls are present with their terminal dots rising one on each side of the rectangle representing half of the face.

Any resemblance of the panel decoration shown in figure 106, to a human head with lateral appendages has wholly vanished. Here the decorated panel border takes the form of a narrow rectangular



FIG. 106.—Panel of stone collar (Latimer collection).

figure with rounded ends, slightly curved upward and crossed at regular intervals by three pairs of bars. In each of the intervals there is a small pit, two of which (*e, e*) represent all that remains of the eyes, and two (*b, b*) those constants at the extremities of the scroll-like appendages that exist in the figure of the most complicated panel border.

There remain other designs on panel borders, one (fig. 107¹) of a collar in the Trocadero Museum at Paris, and the other (fig. 108) in the Latimer collection. The outlines of these show important modifications, but these also in reality teach the same morphology as the preceding, viz., that figures on the decorated panel borders are simply highly conventionalized heads with extended lateral appendages.

There is one feature lacking in the figures last mentioned that should be explained. Since the pits which represent the eyes, as we have pointed out, are here absent, it might be supposed that the conventionalized head is also wanting; but if we compare them with the underside of the figure cut in the panel of the Bremen collar (fig. 109), the reason for this lack is apparent. All of these represent the underside of the lower jaw, not the upper part of the head where eyes, mouth, and nose are present.

From the comparative data given above we are able to say that wherever we have figures cut on decorated panel borders, they probably represent a head, body, arms, or legs, often highly conventionalized and sometimes lost. As the arms or forelegs appear in the more completely represented form figure 101 accompanied with the problematical lateral scrolls, we cannot regard these scrolls as duplicate arms or forelimbs; if they are appendages they must be posterior limbs or legs. The posterior appendages in all these instances have been brought forward into the same plane as that in which the head and anterior legs lie, and by this contortion have lost all likeness to limbs.

This interpretation of the ornamentation of the decorated panel border of the stone collar reduces it to a figure of the same general character, but it takes no account of certain figures on the surface of the panel itself. The figures engraved on this area are sufficiently distinctive to bear certain resemblances whose meaning is doubtful.

The decorated panels of several stone collars (figs. 102, 104, 105, 106) bear an incised ring or circle, sometimes with and sometimes without a central pit. On each side of this circle there are constantly represented well-made figures, of as yet unknown significance, that

¹ The author is indebted to Professor M. H. Saville for this illustration.

have certain common resemblances in all specimens in which they occur. It may be assumed, but without positive proof, that these figures represent parts of the body; for example, the circle, which so often appears in Antillean art, represents the umbilicus, while the



FIG. 107.—Stone collar showing unique decorated panel border (Trucadero Mus. am).

incised geometric lines on each side of it resemble figures of legs or arms.

In several of the decorated panels we find this circle doubled; or these duplicated circles may be connected or modified in such a way as to appear as spirals (fig. 108);¹ or at times parallel lines may

¹ This form suggests the ornamentation of a fragment of a specimen of doubtful relation in the Stahl collection, now in the American Museum of Natural History, New York.

extend from the circles. The figures on the decorated panel of several collars consist of geometric parallel lines arranged in squares and chevrons, a form of decoration sometimes found on panels of massive collars. These are regarded as decorations of the body of the animal or the human form represented.

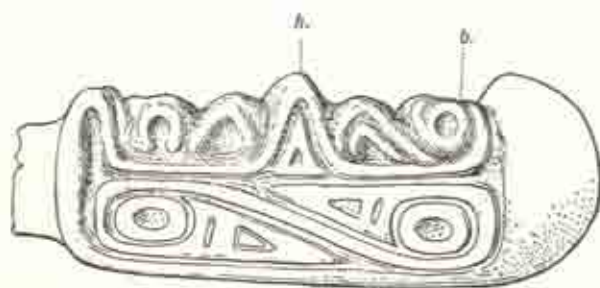


FIG. 108.—Decorated panel and panel border of stone collar (Latinier collection).

The main difference supposed to exist between the Bremen collar and other examples of its kind would seem to be the modification of the projection or knob into an animal head, and yet when we examine a series of collars we find several specimens in which the projection is carved in such a way as to suggest the conventional head of some animal.



FIG. 109.—Under side of decorated panel of the Strube stone collar.

Many massive stone collars¹ and some of the slender ovate² varieties have two "knobs", one of which projects on each side of a binding band or shoulder band filling the interval between them. In one instance the two ends are not united by a band but are hooked together.

¹ Aborigines of Porto Rico, pl. lxxiii, lxxiv, lxxv.

² Prehistoric Antiquities from the Antilles in the British Museum, *Journ. Anthr. Institute*, vol. xxxvii, pl. xi, 1907.

No decorations appear in any of these double knobs, and all are without eyes or other indication of the presence of a head, which is likewise true of those examples in which the projections do not rise above the surface of the collar, although a remnant of the shoulder band¹ may in these cases sometimes survive.

When the projection bears any design, it is commonly flattened, with a pit on each side. Another form of simple flattened knob, having circles on each side and parallel lines between them, is found on the second Bremen specimen. In the Heye Museum example, where the projection is not very prominent, it is marked by a single transverse and several parallel grooves, recalling the parallel lines between the pits in an undescribed collar in the Bremen Museum.

The simplest interpretation of these variations in the so-called projection or knob of a stone collar would be that, like that of the Strube specimen, it represents a highly conventionalized head, and that the accompanying pits or circles are eyes.

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WASHINGTON, D. C.

¹Aborigines of Porto Rico, pl. lxx, f.

THE MAN OF PILTDOWN

By GEORGE GRANT MACCURDY

THE story of the Piltdown discovery is already more or less familiar to readers of this journal.¹ But the recent gathering and publishing of additional data² on the subject should not be allowed to pass unnoticed. This is especially true not only because of the far-reaching significance of the discovery, but also because British scientists have been known to be at odds concerning the reconstruction of the skull in question.

It will be recalled that Dr Smith Woodward regarded the Piltdown specimen as the type of a new genus of the family Homiidae, to which he gave the name *Eoanthropus dawsoni*, and which was defined primarily by the characters of the mandible. Of the mandible only the right ramus with first and second molar teeth *in situ* was at first discovered. The condyle and symphysis were both lacking, but the fragment was of sufficient size to enable Dr Smith Woodward to reconstruct the symphysis with a fair degree of accuracy. It was the reconstruction of the cranium about which differences of opinion arose between Dr Smith Woodward and Professor Elliot Smith on the one hand and Professor Arthur Keith on the other.

Of the brain case nine fragments, parts of the frontal, parietal occipital, and temporal, were found. From these Dr Smith Woodward reconstructed a skull with a capacity of about 1076 cc. On the other hand a reconstruction by Professor Keith gave to the skull a brain capacity of 1500 cc., in other words that of a well-developed modern European skull. After further study Dr Smith

¹ *American Anthropologist*, N. S. XV, Apr.-June 1913.

² Chas. Dawson and A. Smith Woodward, Supplementary Note on the Discovery of a Palaeolithic Human Skull and Mandible at Piltdown (Sussex), *Quar. Jour. Geol. Soc.*, LXX, Apr. 1914.

Woodward acknowledges a small error. He finds that the "longitudinal ridge along the outer face at the hinder end of the parietal region is not median, but one of a pair such as frequently occurs in the lower types of human crania." In the published reconstruction there should thus be a slight readjustment of the occipital and right parietal bones, "but the result does not alter essentially any of the conclusions already reached."

With this opinion Professor Elliot Smith is in complete accord. From an examination of the original fragments he was able to determine the location of the median line of the skull. The persistence of slight traces of the sagittal suture in the regions of the bregma and lambda made this possible. The true median plane

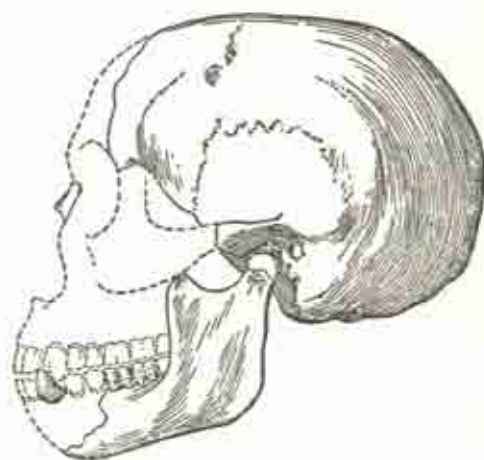
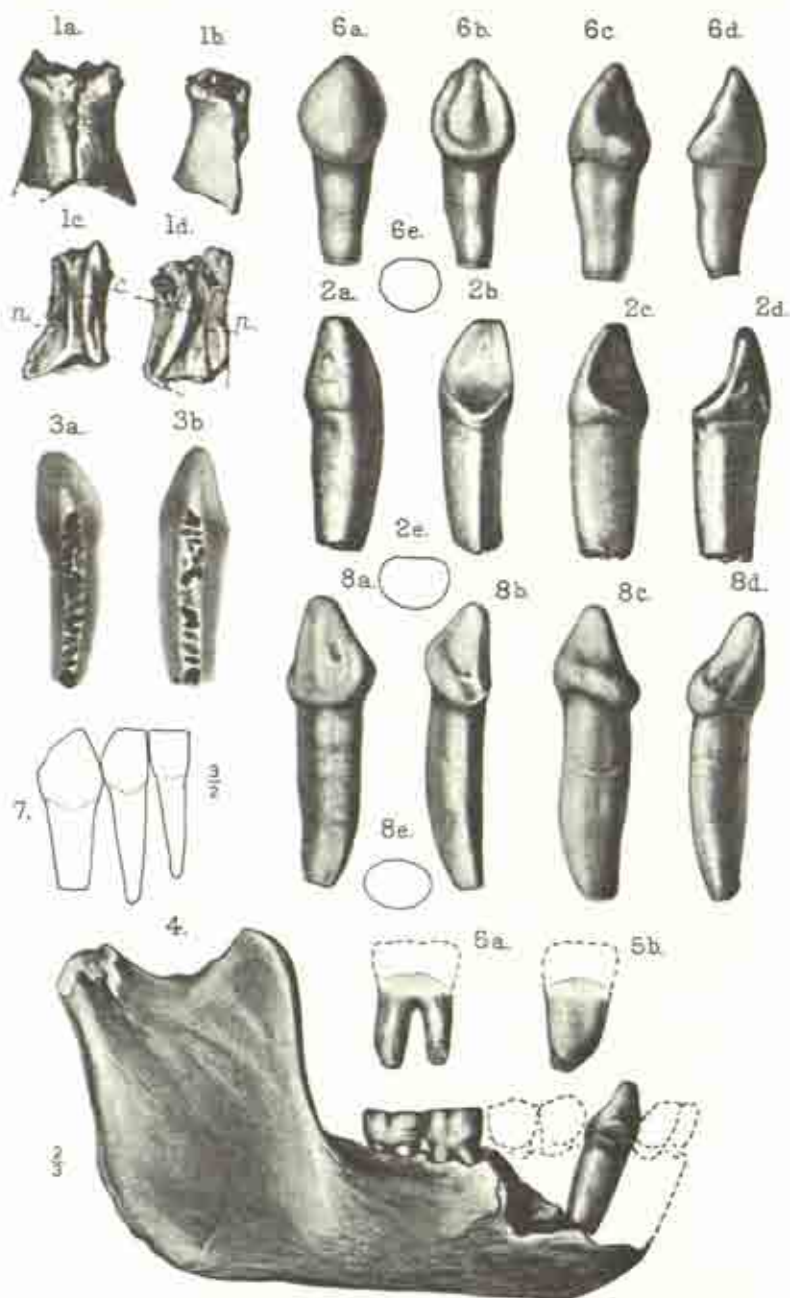


FIG. 110.—Restoration of the skull and lower jaw of *Eoanthropus dawsoni*; nearly a third of natural size. After Dawson and Woodward.

in this particular case however passes a little to the left of the union of the coronal with the sagittal suture owing to a slight deflection of the latter. Since this deflection is never more than a few millimeters (except where large bregmatic wormian bones are present, and they are not present in this case), the bregma and lambda are good guides in locating the median plane. In line with the

median plane as thus determined, the endocranial aspect of the frontal bone presents a well-defined longitudinal ridge, corresponding to the "place where the two halves of the frontal bone originally came together at the metopic suture." The cranial capacity then of the Piltdown skull is evidently not very much greater than the original estimate of 1076 cc.

In addition to exhaustive laboratory studies on the parts above



Figs. 1a-1d. Nasal bones of *Eoanthropus dawsoni*. Figs. 2a-2d. Right lower canine of *E. dawsoni*. Fig. 3a-3b. Radiograph of the same. Fig. 4. Right mandibular ramus of *E. dawsoni*. Figs. 5a-5b. Impression of cavity for roots of third lower molar. Figs. 6a-6e. Right lower milk-canine of *Homo sapiens*. Fig. 7. Right lower milk-canine and milk-incisors of *H. sapiens*. Figs. 8a-8e. Right lower milk-canine and milk-incisors of *Simia satyris*. Natural size unless otherwise indicated. After Dawson and Woodward.

mentioned, a painstaking and systematic search was made at the Piltdown site. The mandibular ramus had been found *in situ*. All the gravel *in situ* within a radius of 5 meters of this spot was "either washed with a sieve, or strewn on specially prepared ground for the rain to wash it; after which the layer thus spread was mapped out in squares, and minutely examined section by section." In this spread Father Teilhard de Chardin, assisting at the work for three days, found the right canine tooth in August, 1913. The two human nasal bones and the turbinated bone were not recovered from this spread but from disturbed gravel within less than a meter of the spot where the mandible had been discovered.

The nasal bones (pl. xxx, 1a-1d) are said to "resemble those of existing Melanesian and African races, rather than those of the Eurasian type." In thickness they correspond to the bones of the skull previously found. The canine tooth not only corresponds in size to the mandible but belongs to the same half (right) as that recovered. It likewise agrees with the two molar teeth in the degree of wear due to mastication. The extreme apex is missing, but whether by wear or by accidental fracture is not determinable. The enamel on the inner face of the crown (pl. xxx, 2b) has been completely removed by wear against a single opposing tooth. The worn surface "extends to the basal edge of the crown, as indicated by the clear ending of the cement along its lower margin." This canine tooth is larger than any human canine hitherto found, and interlocked with the opposing upper canine. It rose above the level of the other teeth and was separated from the lower premolar by a diastema. On the other hand there is no facet due to wear against the outer upper incisor, such as often occurs in the apes.

If a comparative anatomist were fitting out *Eoanthropus* with a set of canines he could not ask for anything more suitable than the tooth in question. It conforms to a law in mammalian paleontology, "that the permanent teeth of an ancestral race agree more closely in pattern with the milk-teeth than with the permanent teeth of its modified descendants." Even a cursory view of plate xxx will bring out the points of resemblance between the Piltdown canine (figs. 2a-2d) on the one hand and the corresponding milk

canines of *Homo sapiens* (figs. 6a-6d) and of *Simia satyrus* (figs. 8a-8d) on the other. It is pointed out that in recent Man if the base of the crown of the canine were raised in the gum to the same level as that of the adjacent teeth, its apex would frequently rise well above the rest of the dental series (pl. xxx, fig. 7).

The various elements that make up the gravel bed at Piltdown are better known today than when the first report was published; additional fossil animal remains have also been recovered. Four

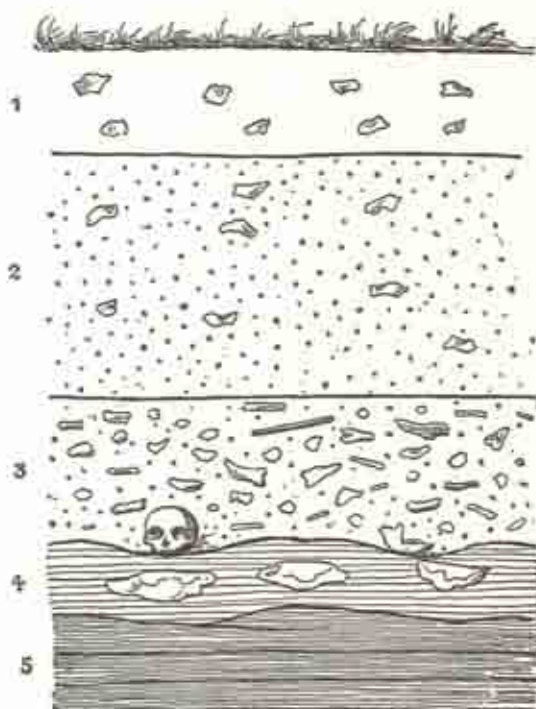


FIG. 111.—Section of gravel bed at Piltdown (Sussex). After Dawson and Woodward.

well-defined layers have been determined (fig. 111). At the top is a deposit of surface soil 35 cm. thick, containing pottery and flint implements of various ages. The second bed consists of undisturbed gravel varying from a few centimeters to a meter in thickness. The prevailing color is "pale yellow with occasional darker patches."

A rude paleolith of the Chellean type was found in the middle of this layer, which likewise contained rolled iron-stained subangular flints. The third layer, some 50 cm. thick, is easily distinguished because of its dark ferruginous appearance. It contains rolled and subangular flints similar to those found in the layer above. All the fossils (with the exception of the remains of the deer) were either discovered in or have been traced to this third layer. So-called eoliths and at least one worked flint were likewise found here. The *Eoanthropus* remains came from it and near the uneven floor forming the upper limit of the fourth stratum. The latter has a thickness of about 25 cm., is non-fossiliferous, and "contains flints of a much larger size than any of those in the overlying strata." Nothing that could be called an implement or eolith has been reported from the fourth bed. Below (no. 5) are undisturbed strata of the Tunbridge Wells Sand (Cretaceous).

Our knowledge of the Piltdown fossil fauna has been supplemented by the finding of remains of one new form, a fragment of a tooth of *Rhinoceros*, in the same state of mineralization as the teeth of *Stegodon* and *Mastodon* previously described. While the specimen cannot be determined with absolute certainty, it belongs either to *Rhinoceros mercki* or *Rh. etruscus*, with the evidence rather favoring the latter. Additional remains of *Stegodon* (fragments of a molar) and *Castor* (fragment of mandible) were likewise recovered. Judged from its fossil content the third stratum at Piltdown would be classed as Pliocene were it not for the presence of *Eoanthropus* and the beaver. In view of the fact that the remains of these, although softer, are not so rolled and worn as the other fossil remains; the third bed, although composed in the main of Pliocene drift, was probably reconstructed in early Pleistocene time.

Those who might have objected to the use of the name *Eoanthropus* for the Piltdown skull can no longer deny its appropriateness when applied to the lower jaw, especially since the finding of the canine tooth. While the probabilities are all in favor of the three parts belonging to one and the same individual, the case for *Eoanthropus* does not have to depend on producing positive proof

to that effect. The only flint implement of Chellean type came from the layer above (no. 2), and is of later date than the human remains. Did *Eoanthropus* make use of the eoliths found in tell-tale association with him? The Future holds this secret, and, if hard enough pressed, may some day reveal it.

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ALEXANDER FRANCIS CHAMBERLAIN—1865-1914

In Memoriam: Alexander Francis Chamberlain

IN the death of Alexander Francis Chamberlain, professor of anthropology in Clark University, Worcester, Massachusetts, Anthropology lost one of its foremost representatives in the New World, and one who performed unique service to the science. Death was due to gangrenic diabetes, an insidious disease whose presence was unknown to him and others until a few weeks before the end. He attended to his work at the University until an affection of his foot confined him to his home; whereupon a medical diagnosis revealed the fatal disease. He passed away at his home in Worcester on April 8, at the age of forty-nine years. His body was cremated and the remains were interred at Mount Auburn in Cambridge, Massachusetts. He is survived by his wife, Isabel Cushman Chamberlain, a daughter thirteen years of age, and a brother and a sister in Toronto, Canada. To the brother, Mr Thomas B. A. Chamberlain, the present writer is indebted for information about Dr Chamberlain's early life and education. A memorial volume will be published in the autumn, in which much material not included here will appear.

Alexander Francis Chamberlain was born January 12, 1865, in Kenninghall, Norfolk, England, the eldest child of George and Maria Anderton Chamberlain. His ancestors were of sturdy English yeoman stock. While he was still a child, the family came to America and first settled, for about a year, near Bushnell's Basin in New York state, where his schooling began. From there the family moved to Peterborough, Ontario, where the elder Chamberlain became a prominent business man. Here Alexander attended the Union School and the Collegiate Institute. He passed with honors the matriculation examination for the University of Toronto, winning the scholarship awarded by the Peterborough Collegiate Institute. To enable him to pursue his university studies, his parents removed to Toronto, where they lived until their death, three months apart, in 1904.

At the University Chamberlain chose the department of modern languages. Throughout his course he took high honors and received many college prizes. In 1886 he was given the degree of B.A., with honors in modern languages and ethnology. He became greatly interested in ethnology, in the department of Sir Daniel Wilson, then president of the University, who became a warm personal friend.

In 1887 he was appointed fellow in modern languages in University College, Toronto, a position which he held for three years, during which he did tutorial and post-graduate work. He was examiner in German in University College and the University of Toronto, examiner in modern languages in the University of Trinity College, Toronto, and examiner in French and German for the Department of Education of Ontario. During this period he continued his anthropological studies, giving special attention to the Mississaguas of Scugog, an Algonquian tribe to which he paid many visits, becoming acquainted with their language and customs. The results of these investigations were embodied in a thesis, for which he was awarded the degree of M.A. by the University of Toronto in 1889. Several contributions of this period, as well as of later years, appeared in the publications of the Canadian Institute (now the Royal Canadian Institute), of which he was for years a member and at one time librarian.

In 1890 Chamberlain accepted a fellowship in anthropology in Clark University, which had been opened only the year before. Clark was the first institution in America to recognize anthropology as a subject for post-graduate study leading to the degree of Ph.D., and the first to confer such a degree, that received by Dr Chamberlain in 1892. His researches there were carried on under the direction of Dr Franz Boas, then docent in anthropology at Clark. His dissertation was on the language of the Mississagua Indians.

In the summer of 1891, on the recommendation of Sir Daniel Wilson, he went to British Columbia to study the Kootenay Indians, under the auspices of the British Association for the Advancement of Science, in whose Proceedings his report was published in 1892. As will be seen by referring to his publications, Chamberlain kept up a life-long interest in these Indians, on whose language and culture he was recognized as the foremost authority.

When Dr Boas left Clark University in 1892, Dr Chamberlain was appointed his successor, with the title of lecturer in anthropology. In 1904 he became acting assistant professor, and assistant professor in 1908. In 1911 he was made full professor. By his investigations and publications he contributed substantially to the fame of Clark University as a center of scientific research.

Dr Chamberlain has contributed voluminously to the literature of anthropology and cognate sciences. His rare knowledge of European languages was an invaluable asset to American anthropology. Articles from his pen appeared frequently in European as well as in American

journals. The appended bibliography, selected from a much longer list of titles, gives some idea of the scope of his scientific work and interest.

He rendered important service through editorial work on a number of periodicals. From 1900 to 1908 he was editor of the *Journal of American Folk-Lore*. Up to the time of his death he was a department editor of the *American Anthropologist* and the *American Journal of Archaeology*. He was co-editor, with Dr G. Stanley Hall, of the *Journal of Religious Psychology* (including its anthropological and sociological aspects), published at Clark University. His excellent annotated bibliographies of current anthropological periodical literature, which involved a prodigious amount of labor, were for many years important features of the *American Anthropologist* and the *Journal of American Folk-Lore*, more recently of *Current Anthropological Literature*.

He contributed a large number of articles to several standard works of reference, including the *New International Encyclopedia*, the *Encyclopedia Americana*, the *Handbook of American Indians*, Monroe's *Cyclopedia of Education*, and Hastings' *Encyclopedia of Religion and Ethics*. His consummate product of this type was undoubtedly his article on the North American Indians in the new edition of the *Encyclopædia Britannica*, a masterpiece and model of encyclopedic writing, a distinct advance on anything of its kind which had before been published.

Dr Chamberlain was an authority in American Indian linguistics. Special fields of research were the Kootenay and Algonquian languages. His publications on the linguistic problems of South America are recognized as authoritative by students in two hemispheres. At the time of his death he had practically completed his work of many years on a distribution-map of the South American aboriginal languages, similar to that by the late Major J. W. Powell for the stocks north of Mexico. He had finished the first part of a Kootenay dictionary and grammar, which remains in manuscript form.

Dr Chamberlain was a member of numerous learned societies in both of the Americas and in Europe. He was a vice-president of the American Anthropological Association and a former secretary of the anthropological sections of both the British and the American Association for the Advancement of Science. He was a member of the American Antiquarian Society, fellow of the American Ethnological Society, honorary member of the American Folk-Lore Society, and corresponding member of the Société des Américanistes de Paris, the Institut de Coimbra, Portugal, and the Sociedad de Folk-Lore Chileno of Santiago de Chile.

Not only by training, but by native disposition, Dr Chamberlain was eminently fitted for the tasks of a student and teacher of the Science of Man. Of him it can be truthfully said that he was a man and he considered nothing human foreign to himself. "Generically human" was a favorite phrase with him, and he was himself a living embodiment of that idea. He understood and appreciated the life and outlook of primitive men, for beneath diversities of culture he recognized the generic, fundamental, universal human traits. He held that there is "not a single thing in ideal civilization not foreshadowed in primitive life." And he often called upon primitive folk as Daniels to sit in judgment on the follies and vices of our civilization. His essay entitled "The Human Side of the Indian," based on his own experiences in the Kootenay country, brings out his appreciation of primitive man. He realized the truth expressed by Dr Marett, of Oxford, that "we need to supplement the books on abstract theory with much sympathetic insight directed towards men and women in their concrete selfhood."¹

In his interpretations of human culture Dr Chamberlain took in a decided way the historical and psychological points of view, represented by such writings as Dr Boas's book, "The Mind of Primitive Man," and Dr Wissler's essay, "The Doctrine of Evolution and Anthropology" (*Journal of Religious Psychology*, July, 1913). The biological conceptions of evolution did not, according to him, apply to the history of man's culture. To account for the origin of man himself on evolutionary principles, "mutation rather than gradual accretion by minute changes" seemed the more reasonable hypothesis. And he doubted whether any organic changes of cultural significance had taken place since the advent of man. He held a similar view of the living races of men; as regards ethnic groups, "physical variations are negligible from the point of view of culture." His views on this point are well illustrated in his articles on the contributions of the American Indian and the Negro to human civilization. The last of these is a wholesome antidote to the negrophobia so common in the land of his adoption. He was a relentless opponent of Lombrosian views of criminality and Freudian theories of sex. Neither did he get excited over the prospects and projects of eugenics: he would agree with the late Lester F. Ward, that what the human race needs is not more ability but more opportunity.

As might be expected of one who placed such emphasis on the generically human, child-life had to him an absorbing interest and a profound significance. His intimate association for almost a quarter of

¹ *Anthropology*, p. 243.

a century with the father of scientific child-study, President G. Stanley Hall, was a constant stimulus to his inherent interest in that field. Their mutual helpfulness and coöperation did not preclude marked differences of opinion, as for example on the recapitulation theory, which Dr Chamberlain regarded as essentially unsound as a pedagogic doctrine, no matter what might be its biological validity. It is significant of the man's interests that his two published volumes, "*The Child: a Study in the Evolution of Man*" and "*The Child and Childhood in Folk-Thought*," both deal, as their titles indicate, with phases of this great subject. At his death he left, in completed manuscript form, another book on child-life and education among primitive people, which is now being prepared for publication. Together with his wife, he published a series of "*Studies of a Child*," based on observations of their own daughter, which are among the best of the kind in the literature of child-study.

Dr Chamberlain's studies of primitive peoples and his work within academic walls did not prevent him from taking an active interest in the affairs of the world about him. While in Toronto he was deeply interested in politics, and was a prominent member of the Young Men's Liberal Club and the Toronto Reform Association. After coming to Worcester, he became identified with the radical wing of the Democratic Party. He was for a time chairman of the Democratic City Committee and served as alderman-at-large. He took part in many reform movements. He was a staunch advocate of international peace, "anti-imperialism," the single tax, woman suffrage, labor unionism, total abstinence and prohibition.

Strikingly expressive of his generic, full-orbed humanity, was his appreciation and cultivation of two aspects of human life which are not regarded by some as on intimate terms with the scientific mind, namely the poetic and the religious. His essay entitled "*The Death of Pan*" brings out his conception of the relations of poetry and science. We are not surprised to find that his favorite poet was Tennyson; he regarded "*In Memoriam*" as the greatest poem in modern literature. Like Huxley, the English biologist, and Brinton, the American anthropologist, Dr Chamberlain not only appreciated the value of poets, but himself wrote poetry. In 1904 he published a volume of poems (Richard G. Badger, Boston): several of these, as well as many of later date, appeared from time to time in various newspapers and magazines. His poems give a beautiful picture of the innermost thought and feeling of the author. The themes cover a wide range of topics—love and childhood, friendship and domestic life, peace and war, politics and religion.

In his academic lectures he emphasized the function of religion in the history of culture; he spoke of it as "a great cause in the advancement, retardation, and abolition of institutions," and "the most powerful of human motives, in the individual and the community." He affiliated with the Unitarian body, but the modernism of that denomination did not prevent his appreciation of the significance and value of the forms of religion which differed from his own in their intellectual statements. With the religions of primitive peoples he felt a strong bond of fellowship, and he spoke sympathetically of certain doctrines and practices of Catholicism, which he considered in many respects more "generically human" than "our cold northern Protestantism." His profound religious faith breathed in lines like these from a hymn entitled "The God of our Fathers":

My father's God, Thou still art mine;
'Mid changing creeds and names forgot,
The Eternal Goodness alters not,
The voice I hear, they heard, is Thine.

Thou art the same through ceaseless time,
Immutable while ages roll;
'Tis but the imperfect human soul
Whose aspect shifts with date and clime.

And, though in bygone ages they
At other altars may have knelt,
The God that with our fathers dwelt
Remains the same with us to-day.

In the daily intercourse with family and friends the richness of his character was constantly manifested. He was always cheerful and cordial. He loved simplicity and sincerity in all things. His everyday life, as well as his *Weltanschauung*, was marked by a lofty idealism and a triumphant optimism. Home life held an exalted place in his thought, and he was religiously devoted to his own home and family. "Home was the primal fount of prayer" and "the oldest faith was fireside trust" was a burden of his song. I can do no better than to close this sketch with the following lines inscribed to him by one of his pupils, Dr Miriam Van Waters, now of Portland, Oregon:

Stern champion of the human race, of man as human,
Scorned of the petty pride of creed and skin and strength,
Warrior for the weak and young,
Builder of wonder-dreams for man,
And singer of strange, sweet songs:

Thou wrought'st again the dead to life,
 Thou gav'st long buried folk their due.
 As some patient digger upturns the lovely face of some old jar,
 Whereon the finger-print of tiny hands
 Reveals the mother-heart of her who fashioned it,
 Nursing her child the while;
 So you lifted the earth from off her long dead loves
 And hopes and dreams of simple folk;
 You showed the world their worth.
 Old gods, long dead, you breathed upon and made to walk again,
 In all their gentle human traits,
 In all their wrath and power.
 We never dreamed how great was man,
 How ever since the world began,
 He toiled and wept and loved,
 And in his heart kept flowers abloom,
 The tender flowers of his imagining,
 His dreams of peace and laughter in the sun,
 His vision of the children in their play.

Now, who shall champion thee,
 O great worker in the human craft,
 Whose hand is weak with pain,
 Whose battle-shout is silenced in the night?
 A hundred thousand of the folk will champion thee. —
 The coolie and the wage-slave and the black,
 The outcast and the nestling,
 And he whose lands are taken,
 And he whose hopes are slain,
 All these shall give thee shelter in their hearts,
 And cherish thee so long as life shall last.

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DISCUSSION AND CORRESPONDENCE

ADOLPH FRANCIS ALPHONSE BANDELIER

ADOLPH FRANCIS ALPHONSE BANDELIER, distinguished for his researches in archeology and Spanish-American history, died in Seville, Spain, on March 19th. Born in Bern, Switzerland, August 6, 1850, his early education was very slight, and he never attended school after his eighth year. He was brought to the United States as a boy by his father, who had been an officer in the Swiss army and who settled at Highland, Illinois, where he became engaged in banking. Embarking in several kinds of business during his early manhood, but finding that he was not constituted to lead the life of a man of affairs, Adolph, always a student, directed his attention to ethnology and archeology, thus following in a measure the footsteps of his distinguished countrymen in the field of scientific endeavor, Albert Gallatin and Albert S. Gatschet, pioneers in the study of aboriginal American languages, and reflecting in his subsequent writings the direct and lasting influence of Lewis H. Morgan, to whom he was fond of referring as his "revered teacher." In 1877 Bandelier traveled extensively in Mexico and Central America, studying the archeology, ethnology, and history of the aboriginal inhabitants. His papers "On the Art of War and Mode of Warfare of the Ancient Mexicans" (1877), "On the Distribution and Tenure of Lands, and the Customs with Respect to Inheritance, among the Ancient Mexicans" (1878), and "On the Social Organization and Mode of Government of the Ancient Mexicans" (1879), published by the Peabody Museum of Harvard University, and "On the Sources for Aboriginal History of Spanish America" (1879), published by the American Association for the Advancement of Science, are a part of the product of these investigations. In the first three of these essays, "marked by sound judgment and correct methods of historical interpretation, he had shown a minute and familiar acquaintance with the existing sources of information concerning the conditions of the native races at the time of the Spanish Conquest. Thoroughly equipped in this respect and possessing a knowledge of several European languages, and a fondness for linguistic studies which qualified him for the ready acquisition of native dialects, he has also the advantage of an enthusiastic devotion to his favorite studies; a readiness to endure any hardship in their pursuit,

and a capacity for adapting himself to any necessity." Thus reported the Executive Committee of the newly-founded Archaeological Institute of America, in connection with Bandelier's appointment by that organization to conduct special researches in New Mexico, to which field of labor he repaired in 1880.

Bandelier's first attention was devoted to the ruins of the great histor-



A. F. A. BANDELIER

(Photo. by Charles F. Lummis)

ical pueblo of Pecos, the results of which were presented in a report on "A Visit to the Aboriginal Ruins in the Valley of the Río Pecos," preceded by "An Historical Introduction to Studies Among the Sedentary Indians of New Mexico" (1881, reprinted 1883), being a discussion of the original sources of the Spanish history of the Southwest, with an analysis of the various itineraries of the first explorers and missionaries of that great region.

From Pecos Bandelier extended his researches to the Queres pueblo of Cochiti, where he remained two months on terms of entire familiarity and inspiring such confidence that he was adopted as a member

of the tribe. "My relations with the Indians of this pueblo," he wrote, "are very friendly. Sharing their food, their hardships, and their pleasures, simple as they are, a mutual attachment has formed itself, which grows into sincere affection. They begin to treat me as one of their own, and to exhibit toward me that spirit of fraternity which prevails among them in their communism. Of course they have squabbles among themselves, which often reveal to me some new features of their organization; but on the whole they are the best people the sun shines upon." This visit to

Cochiti was the beginning of several which brought to the observer a keen insight into the life and customs of these villagers, and, with similar observations at the Tewa pueblo of San Juan, finally resulted in "The Delight Makers," a novel of early Pueblo life which, shrouded under a title that affords little clue to the instructiveness and charm of its contents, has never met the appreciation it deserves. It was Bandelier's belief that to present the results of scientific study in such manner that they can be "understood of the people," technical treatment must be avoided even if it should be necessary to guise the subject-matter in the form of a novel.

The opportunity being afforded the Archaeological Institute of sending a representative to join in the researches of the Lorillard expedition to Mexico and Central America under Désiré Charnay, Bandelier temporarily suspended his New Mexico investigations, and in February, 1881, proceeded to Mexico, only to find that Charnay had ceased operations and was about to return to France. Bandelier thereupon proceeded to Cholula, where he spent four months in studying its famous pyramid, the customs and beliefs of the native inhabitants, and especially those respecting the deity Quetzalcoatl, for whose worship Cholula was particularly celebrated. In June he visited Mitla, and later Tlacolula and Monte Alban, and after preparing a report on his Mexican observations, which was published in 1884 by the Archaeological Institute under the title "An Archaeological Tour in Mexico in 1881," returned to the United States in March, to resume his observations on the Pueblos and their remains, a report on which, bearing the title "Investigations in New Mexico in the Spring and Summer of 1882," was issued by the Institute in 1883. Bandelier continued his studies along the same general lines from 1883 to the winter of 1886, meanwhile (in 1885) making Santa Fe his home in order to be in more immediate touch with the field of his observations. During these years he penetrated almost every corner of New Mexico, Arizona, Sonora, and Chihuahua, and explored the country even farther southward in Mexico, visiting and describing hundreds of ruins and surveying and platting many of them. His travels throughout this vast area were almost exclusively afoot and frequently were fraught with danger. More than once he was beset by hostile Indians, including a band of Apache while on a raid, and on one of these occasions his life was spared only because he simulated insanity. During one of his journeys he was afflicted with smallpox, and again, in 1882, had a narrow escape from death in a midwinter blizzard in the desert of eastern New Mexico, where his two companions perished, but his own hardihood

enabled him to brave the storm and to reach safety after journeying 93 miles on horseback and 35 miles afoot through deep snow. So persistent was Bandelier in carrying out his plans of exploration and study, no matter what the personal risk, that several times he was reported to have been killed. He traveled armed only with a stick a meter long and graduated for measuring ruins, and relied on the meager hospitality of a pitifully unsettled and arid country for the means to keep body and soul together. To one who knows not the difficulties of travel in the field of Bandelier's researches thirty-five years ago, can the trials experienced by this earnest and enthusiastic student during the years of his labors be comprehended.

Limitation of space forbids at this time an extended review of Bandelier's investigations in our Southwest and in Mexico. But he who would may readily scan the published accounts of this remarkable man's scholarly efforts, for during his most active years he wrote prolifically of the results of his studies. No small part of his ambition was to upset the popular theories respecting the history, archeology, and ethnology of the great Southwest. To this end he destroyed the fanciful notions regarding the "Aztec" origin of various Pueblo ruins, the "perpetual fire" of Pecos, the "Montezuma" myth among the Pueblos, the age of the city of Santa Fe, the mystery of Quivira and of the "Gran Quivira," the location of the Seven Cities of Cibola, the routes of various early Spanish explorers, and many other fallacious traditions, and was the first to offer scientific evidence, based on his broad scholarship and remarkable ability in the utilization of source material, to settle once for all the varied problems concerning the condition and range of the Pueblo and other tribes before and after the beginning of the Spanish period. As to the enduring value of Bandelier's work, the present writer, who has dabbled in a limited area of the same field, can confidently say that no study pertaining to the history of the tribes of our Southwest and of northern Mexico can be conducted without utilizing the product of Bandelier's researches as a foundation. His sane and acute sense of discrimination in the interpretation of the *intent* of early Spanish explorers and missionaries, his unequaled familiarity with the country, the sources of material, and the Indians themselves, and his remarkable power of analysis, have been the means of placing in the hands of present and future students the materials for more intensive work without which their tasks would be arduous indeed.

From time to time Bandelier prepared various accounts of the progress of his investigations in the Southwest, which were incorporated chiefly in the annual reports of the Archaeological Institute, although

several valuable papers appeared in various periodicals, while some of his knowledge was embodied in brief articles contributed to the "Century Cyclopedia of Names" and, more recently, to "The Catholic Encyclopedia." What may be regarded as his magnum opus, however, is the "Final Report of Investigations among the Indians of the Southwestern United States, Carried on Mainly in the Years from 1880 to 1885," Part I of which was issued by the Archaeological Institute in 1890, and Part II in 1892. Of equal importance, from the historical point of view, is his "Contributions to the History of the Southwestern Portion of the United States," published also by the Archaeological Institute in 1890, partly at the expense of Mrs Mary Hemenway.

Although the two investigators had been working along related lines in the same field for about three years, Bandelier and Cushing did not meet until 1885, but from the moment of their contact at the pueblo of Zuni, where Cushing, in the prosecution of his studies, was then leading the life of an Indian, a warm friendship sprang up which ceased only with Cushing's death in 1900. In Bandelier's judgment the only way in which ethnological researches can be conducted successfully is by long and intimate life among the people to be studied, in the manner then being pursued by Cushing. In Bandelier's estimation Cushing was the only American ethnologist who ever "saw beneath the surface" of the Indians, who was able to think as the Indian thought. In the words of Bandelier, written in 1888, "the value of Mr Cushing's results does not lie so much in establishing a direct connection between such and such tribes; it establishes a *method of research* unknown heretofore, —one which leads to connections as well as to discriminations hitherto unnoticed."

With mutual appreciation of their respective endeavors, there is little wonder that, when in 1886 the Hemenway Southwestern Archaeological Expedition was organized under the patronage of the late Mrs Mary Hemenway of Boston and under the directorship of Cushing, Bandelier was selected as its historiographer. During the next three years he applied himself assiduously to a study of the Spanish archives relating to the Southwest, not only in Santa Fe, but in the City of Mexico and elsewhere. On the termination of the work of the Hemenway Expedition in July, 1889, Bandelier's collection of copies of documents, together with a few originals, comprising in all about 350 titles, was deposited in the Peabody Museum of Harvard University.¹ In 1887-88

¹ See the Bandelier Collection of Copies of Documents Relating to the History of New Mexico and Arizona, *Report of the U. S. Commission to the Columbian Exposition at Madrid, 1892-93*, pp. 304-326. Washington, 1895.

he prepared an elaborate manuscript of 1400 pages, illustrated with 400 water-color sketches, under the title "*Histoire de la Colonisation et des Missions du Sonora, Chihuahua, Nouveau Mexique et Arizona, jusqu'à l'an 1700*," at the instance of Archbishop Salpointe, who offered it to Pope Leo XIII on the occasion of the Pontiff's jubilee, and it now reposes in the Vatican.

In July, 1892, Bandelier went to Peru to engage in archeological and historical research under the patronage of the late Henry Villard of New York; these were prosecuted under Mr Villard's patronage until April, 1894, when the important collections which had been gathered were given to the American Museum of Natural History, and the investigations were continued for that institution, Bandelier's field of operations being now shifted to Bolivia. Meanwhile, soon after their arrival in Peru, Mrs Bandelier died, and in December, 1893, at Lima, our explorer married Fanny Ritter, an estimable and charming woman, who, by reason of her linguistic training, her appreciation of the problems to the elucidation of which her husband was devoting the remainder of his life, and the breadth of her intellect, was a helpmate in every sense to the day of his death. In Bolivia Bandelier and his wife visited the ruins of Tiahuanacu, where many valuable collections were obtained and the structural details of the ruins studied, mapped, and platted. Returning to La Paz the couple explored the slopes of Illimani, where, at an altitude of 13,000 feet, other valuable collections were gathered from the ruins and burial cists. In December of the same year Mr and Mrs Bandelier visited the island of Titicaca, where three and a half months were spent in archeological and ethnological investigations; subsequently similar important work was conducted on the island of Koati.

Bandelier returned to the United States from South America in 1903, when he became officially connected with the American Museum of Natural History and undertook the task of recording his South American work for publication. He was also given a lectureship in Spanish American Literature in its connection with ethnology and archeology, in Columbia University in 1904. In 1906 he resigned from the American Museum and accepted an appointment with the Hispanic Society of America, under the auspices of which he prepared and published several contributions to South American history and archeology. During a period of about three years, from 1909 to 1911, Bandelier suffered practically total blindness from cataract, but he continued his work, with the aid of his wife, who now became eyes and hands to him. During this period of darkness the most important of his writings on South American

history and archeology, "The Islands of Titicaca and Koati" (New York, 1910), was published by the Hispanic Society. This book, writes Professor Hiram Bingham, a fellow-student of South American archeology, "is typical of his life-long crusade against tradition and for the truth. In it he shows the falsity of many historical myths for which the Spanish chroniclers and their followers were responsible. Prescott had to rely almost entirely on such sources as Garcilasso de la Vega. Yet that noble Inca left Peru when but a youth, lived forty years in Spain before he began to write, and then with pardonable pride sought to surround the empire of his ancestors with a glamour that should command the respectful admiration of sixteenth-century Europe. Bandelier, by his long years of actual residence among the Indians, was able to remove much of the accumulated crust with which romance and imagination had surrounded the truth. It was due to this ability that his comments on the literature of early Spanish-America were so valuable. His loss will be felt by students of American anthropology for many years to come."¹

In October, 1911, Bandelier was appointed research associate in the Carnegie Institution of Washington for the purpose of enabling him to complete his studies of the Spanish documentary history of the Pueblo Indians, under a grant to extend for a period of three years. Proceeding to the City of Mexico, he was there engaged for several months, aided by his wife, in transcribing early documents pertaining to the subject of his investigation. He returned to the United States in 1913, and in the autumn of that year sailed for Spain for the purpose of continuing his researches in the archives of Madrid, Seville, and Simancas. In these investigations he was engaged at the time of his death.

In personality Bandelier was as simple as a child; he detested sham and charlatanry, was immovable in his friendship, and was an implacable enemy; he was the soul of generosity and hospitality, and was often saved from his troubles (which at times, owing to an extremely sensitive nature, he was wont to exaggerate) through a remarkably effulgent humor. Modesty was one of his strongest characteristics; he abhorred notoriety, and rarely spoke of his personal achievements or of the dangers to which he had often been exposed during his work, except to a few intimates. He cordially disliked titles, and especially that of "Professor"; when thus addressed he is known to have said, "I *profess* nothing—if you would attach a handle to my name, let it be 'Mister'." And he equally detested to hear his name pronounced in any but the French way.

¹ *The Nation*, March 26, 1914, p. 328.

The value of Bandelier's scientific work has already been inadequately appraised in this all too brief sketch of the life and activities of the eminent scholar. There can be no question that the product of his untiring mind during a period of nearly forty years will stand the test of time, although Bandelier himself, with his usual modesty, once expressed the fear that the results of his Southwestern labors, at least, might not eventually prove to be worthy of his efforts. Those who knew Bandelier and the importance of his researches will agree fully with the expression of a companion in the South American field and a long-time friend:

"Fully conscious of the results of his absolute thoroughness of work, he was averse to notoriety; he cared only for the verdict of the Scientific world—and even for that, not enough to pursue it. He was a man essentially modest. Had he not been, he would have been blazoned throughout the world, as far less eminent scholars have been. As it is, his monument is his work, and the love and reverence of those who knew him and his achievements. . . . His extraordinary intuition was balanced by a judicial quality no less rare, which characterizes not only his own writings but his own estimate of his own work. His tireless and conclusive investigations upset many theories, and made him a target of much controversy, of which much was not of the same temperate and equitable quality. His work throughout is distinguished no less by its deep and definitive learning, than by the moderation, gentleness, and justice with which he disposed of theories and statements advanced with less honest revision."¹

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¹ Charles F. Lummis in *El Palacio*, Santa Fe, N. Mex., April-May, 1914.

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"THE RED-PAINT PEOPLE"—A REPLY

In the *American Anthropologist* of October-December, 1913 (p. 707), Mr D. I. Bushnell, Jr, does me the honor to discuss at length my paper describing the Red-paint People of Maine. It is fortunate that Mr Bushnell wrote such a review, for it illustrates how easily one is misled when he has neither investigated the facts nor visited the scenes of explorations which he presumes to criticize. On reading Mr Bushnell's opinions to the effect that the ancient culture I have been studying in Maine is identical with that of modern Indians and is not to be differentiated from other Algonquian cultures, I made an investigation. I thought I might be in error and that Mr Bushnell had discovered sites or cemeteries in New England bearing out his contentions, but that his results had not been published. I immediately addressed the authorities on the subject

in the Smithsonian Institution and at Harvard University. These gentlemen informed me that so far as they were aware, Mr Bushnell has done no work in Maine. He may have been on the coast, or possibly he has visited Bar Harbor, but I cannot ascertain that he has carried on researches in the state. This being true, his wrong interpretation of our field labors should not pass unrebuked.

Neither Mr Bushnell nor any other real archeologist could have examined and opened 197 of the so-called graves or deposits (as we have done), nor could he have studied the character of the objects removed from the graves, compared them with objects (or interments) of Narragansett, Penobscot, and similar tribes, and after months of such study conclude that the graves I have described are part and parcel of a modern Indian culture. No unprejudiced worker,—a man who makes observations on field data and does not attempt to reconcile facts with a preconceived theory,—having done our work, would claim that all the New England cultures are one and the same and that they indicate no antiquity.

Next winter we hope to publish the results of our field observations during the last three years. When this report is issued all students of American archeology will agree, if they are amenable to deductions based on facts, that the so-called Red-paint culture is all I have claimed for it, and that Mr Willoughby's conclusions, presented in his able paper many years ago, are entirely true. Further, that the culture is even more pronounced and different from others than Mr Willoughby claimed it to be.

Mr Bushnell states that graves containing ochre abound. Of course they do—hundreds of them, in which there is a little ochre, are found in the United States, and there are records of several in which considerable red paint has been discovered. But in all these graves, whether found in Missouri, Florida, Ohio, South Dakota, or Massachusetts, the Red-paint culture types *do not persist*. That is the very point.

In the last number of the *American Anthropologist* Mr Clarence B. Moore also writes of hematite powder deposits in mounds. But in his extended quotations he mentions pottery as being among the objects discovered in association. Mr Moore's collections, illustrated in his magnificent books, show types common to the Florida and Alabama graves, but these are absolutely distinct and different from the stone tools Mr Willoughby and I have taken out of the ground. We get no pottery in the Red-paint groups.

If there were no difference as to types, layers, etc., between our Red-

paint deposits and the several mounds opened by Mr Moore or Mr Douglass, and Mr Bushnell's historic graves, I would scarcely be so foolish as to oppose evident truths and subject myself to adverse criticism. It is because these deposits are different from Mr Bushnell's graves and Mr Moore's mounds that I have drawn my conclusions.

I have found mounds containing colored earths, but I never discovered gouges, plummetts, fire-stones, adze-blades, flat celts, and long "Penobscot-type" pendants in them.

I contended that the types described do not persist elsewhere, and this statement is in accord with the facts. Mr Bushnell's views are contrary to the facts.

The adze-blade, the gouge, the flat hatchet, the long slate points, the plummetts, the fire-stones, and the hammer-stones—these are fixed types in the Red-paint culture area. The graves contain a preponderance of red paint. This is not true of the recent Indian cemeteries elsewhere in New England. To claim, as does Mr Bushnell, that because red paint is found in other portions of the country, these graves are not distinct from other cultures, is as logical as to contend that because prehistoric pottery is found in Florida, New Mexico, and Pennsylvania, pottery represents one and the same aboriginal culture regardless of locality.

Mr Moore does not group his Florida culture with that of Ohio and Wisconsin, although pottery is found in all three localities.

Mr Bushnell seems unable to realize that all Indian burials are not alike; that our observations were made with the greatest care and thoroughness, and that if these cemeteries, or deposits, and what is in them were but a duplication of other sites, we would have stated that fact.

Mr Bushnell's statement that I consider these graves very ancient merely because they are different from others, is incorrect. The graves are so old that one-fifth of the stone objects have commenced to disintegrate. In many places we cannot trace the outlines of the graves, although we made use of hand trowels and whisk brooms, and worked with extreme care.

Recently a large Algonquian cemetery was opened near Warren, Rhode Island. The interments indicate the early historic period, and are probably two hundred years old, if not more. In these graves fragments of cloth were found fairly well preserved, and on one or two of the skulls portions of the long hair remained. I would suggest that Mr Bushnell compare these finds with ours.

I worked along the Merrimac river this summer and found a number

of interments, but these do not compare generally or in detail with those of the Red-paint culture. These cemeteries are exactly like those Mr Bushnell imagines we discovered in the Red-paint area. In reality they are vastly different and should under no circumstances be grouped with them.

The sand ridges, in which most of the Red-paint people placed the deposits, are not wet, as Mr Bushnell imagines, but dry. The sole exception is the Mason site at Lake Alamoosook, and this is due to a dam constructed in recent times at the outlet of the lake. In my statement that the Maine graves are old, I subscribe to the belief expressed to me in conversation by such distinguished workers as Professor Putnam and Mr Willoughby. In archeology, when a man has labored for thirty years, he certainly should be permitted to express conviction that deposits in which stone implements decay are older than interments made just prior to the visit of John Smith or of Captain Mason.

If these graves are modern; if the Red-paint culture is the same as all other cultures in New England; if nothing is to be learned from such work as is being done in Maine—the hardest kind of work, involving hundreds of miles of travel, inconvenience, and the expenditure of large sums of money—then are we wasting our time, efforts, and means. At this writing, we have just come 233 miles through the Maine woods searching for sites on the St John river and its tributaries. We have dug in scores of places, but as yet have found no sites such as occur in the Red-paint area.

If the Indian is of the same culture and epoch throughout New England, as Mr Bushnell's article seems to imply, then all of us should abandon field work and confine our studies to historical documents. We will thus be saved useless expense and unprofitable labor. Having exhausted the historical data, we might study the life and record the opinions of the modern Penobscots living in Oldtown, Maine, and who now serve as farmers, carpenters, lumbermen, and guides. If Mr Bushnell is right, there would be no archeology. We should study the living and permit the dead to rest in their graves.

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TWO ALLEGED ALGONQUIAN LANGUAGES OF CALIFORNIA

THE last number of volume 15 of the *American Anthropologist* contains an article by Dr Sapir attempting to show that Wiyot and Yurok, two native languages of California, belong to the Algonquian stock.

As both these languages hitherto have been considered as independent families, or at the best remotely connected with each other, the importance of this discovery, if valid, can hardly be overestimated. Considering the inherent improbability of such a relationship, for geographic if for no other reasons, since the article comes from the pen of so careful and able a scholar, it is important that the thesis should be confirmed or refuted as soon as possible. My colleagues, Doctors Swanton and Frachtenberg, and Mr J. N. B. Hewitt, have respectively furnished me the data on Coahuilteco, Tunica, Chitimacha; Coos, Molala, Kalapuya; and Iroquois.

In spite of the goodly array of lexicographical material which Dr Sapir has assembled, I am quite unconvinced that either Wiyot or Yurok belongs to the Algonquian stock. My reasons briefly are: (1) that the published Wiyot and Yurok material indicates that both have many morphological traits which are thoroughly un-Algonquian; (2) that many of the supposed resemblances between Wiyot and Yurok morphological elements to Algonquian are purely fanciful as different elements are compared; (3) that many of the supposed similarities in morphological elements must be considered as accidental, for they occur likewise in a number of other languages; (4) that Wiyot and Yurok possess some morphological elements which strongly resemble those of several non-Algonquian languages; (5) that fancied lexicographical similarities have little or no weight in view of the above points.

The following are some of the most pronounced un-Algonquian morphological features of Wiyot:

1. In the combination of a noun and an adjective, the order is the noun with suffixed adjective.
2. Nouns are not classified as animate and inanimate; nor are singular and plural distinguished.
3. The verbal pronouns do not distinguish animate and inanimate third persons, nor are the exclusive and inclusive first persons plural distinguished.
4. The subject and objective verbal pronouns of the third person do not distinguish between singular and plural.
5. The verbal pronouns are the same in all modes, and they are in all cases suffixed, and modality is expressed by prefixes.
6. The verbal pronoun of the first person often is not indicated at all.
7. The verbal pronouns (save one case discussed below) do not bear the remotest resemblances to those of Algonquian.
8. The verbal subjective and objective pronouns in transitive verbs

are not so fused that analysis into the component elements often is nearly and sometimes utterly impossible.

9. The stem-vowel of a verb is not changed to form a participial.

10. In demonstrative and interrogative pronouns, neither animate and inanimate nor singular and plural are distinguished.

11. A demonstrative element *ru-* is frequently prefixed to verbs.

12. The possessive pronoun of the third person does not distinguish singular and plural.

13. In pronouns of the third person we have no such device as in Algonquian to distinguish identity and difference in several third persons in a sentence.

14. Instrumental particles showing by what the action is done, i. e., by the hand, by the foot, with the mouth, with something sharp,—instrumentality in general,—often simply to transitive a verb, do not occur. The Wiyot suffix *-ut*, denoting that the action of a verb is performed with an instrument, is not comparable as a noun with which the action is performed is expressed outside the verbal complex.

15. A special particle is always attached to the first word of an interrogative sentence.

16. Reduplication is not common. Despite Dr Sapir's assertion, reduplication is common in Algonquian. The reason that it is not discussed at length in the *Handbook of American Indian Languages* is that at the time of its preparation definite rules governing this could not be formulated; at the same time the great number of ideas expressed by reduplication was clearly indicated.

17. Middle and passive voices appear to be wanting.

It is perfectly true that many of the above objections are negative, that is, that thus far the phenomena listed have not been reported. It is possible that further investigation may reveal some of them, but it is not likely that a skilled investigator like Dr Kroeber would have overlooked the majority of them. Now it is perfectly conceivable that a divergent Algonquian language might possess a few of the un-Algonquian traits mentioned above, but it is incredible that any Algonquian language possesses all of them *en masse*. For this reason the apparently abundant lexicographical material does not impress me, for how can one be sure that the corresponding morphological elements are being compared, in view of the un-Algonquian morphology of Wiyot; and in point of fact, demonstrably in certain cases at least, the wrong elements are compared. Either Wiyot is very different from the published description, or it is not an Algonquian language.

In the case of Yurok it is not possible to make as extensive a list of un-Algonquian features as in the case of Wiyot. But that is presumably because the actual material is more scanty, nor is it as good in quality. A list, such as it is, follows:

1. True substantives may be combined into a single noun. Though not absolutely absent from Algonquian, it is rare.
2. Nouns are not classified as animate and inanimate, nor are singular and plural distinguished.
3. The independent pronouns have objective case-forms.
4. The plural and singular of possessive pronouns are the same.
5. The first person exclusive and inclusive are not distinguished in the independent, possessive, or verbal pronouns.
6. Apparently in demonstrative and interrogative pronouns, neither animate and inanimate nor singular and plural are distinguished.
7. The verbal pronouns do not in the remotest way resemble Algonquian ones (for alleged resemblances, see below).
8. In the verb, modality is expressed by prefixes, not by different pronouns.

The comments made under the Wiyot list apply with equal force here.

Now let us examine some of the alleged morphological evidence advanced by Dr Sapir to show that Wiyot and Yurok are Algonquian languages.

In Wiyot the objective pronoun *-a* "him" is held to be identical with Fox *-a* in *a-tci*, of the conjunctive mode, "thou—him." Now it is impossible to separate Fox *-atci* from Fox *-tci* "he," intransitive, of the same mode, and *-itci* "he—me," of the same mode, in which *-i-* is the objective pronoun first person singular. (See *American Anthropologist*, N.S., 15, p. 694.) Obviously the *a* of *-atci* does not mean "him," but the *tci* does. In fine, the wrong morphological elements are being compared.¹ Now from what has been said about Fox *-atci*, it is impossible to regard the *a* of Fox *-agi* "I—him," of the conjunctive mode, as being the objective pronoun of the third person animate singular. Moreover, it should be recalled that Fox *-agi* also means "he—it." For both these reasons we cannot consider the *-gi* of *-agi* "I—him" as the subjective pronoun of the first person singular. Therefore the comparison with Yurok *-k* "I" fails as the wrong morphological elements are being compared. In the same way Wiyot *-it*, *-at* "thou" can not be compared

¹ If Wiyot *-a* "him" bears a resemblance to anything Algonquian it is Fox *-a* in *-atci*, *-asa*, *-agecāni* "he—him, them an." of the conjunctive, potential subjunctive, and interrogative conjunctive modes respectively.

with *-tci* in Fox *-tci* "thou—him," as we are dealing with different morphological elements.

Yurok *-m* "thou" is compared to Ojibwa *-m* "you" (pl.) of the independent mode. The full Ojibwa form is *ki-m*, which corresponds exactly to Peoria *ki-mwa*; and Dr Sapir has noted that *mwa* is preserved in the Ojibwa imperfect *-mwa-ban*. It is intimated that the *m* denotes the second person singular "thou," and the *wa* a second person plural suffix. I regret that a proper discussion of this point involves a discussion of the principles of the formation of the independent mode in Algonquian generally. It is universally agreed that the pronouns of the independent mode are to be associated with the possessive pronouns. It is also known that in Algonquian an *m* suffix is often used in connection with the suffixed portions of the possessive pronouns. Now, as I have heretofore intimated (*American Anthropologist*, N.S., 15, p. 694), certain supposed active forms turn out to be passives in formation.¹ Thus Fox *ne-gwa* "he—me" stands for *ne-gu-a*; *-gu-* is the same as the *-gu-* passive sign; *ne-a* the same as the possessive pronoun of the first person singular, animate singular, without the *m* suffix. So an expression as Fox *newd-pamegwa*, "he looked at me," really means "my being looked at." A further point I wish to make here is that in the independent mode, as in the possessive pronouns, the *m* suffix may be used. Thus in Menomini the intransitive first person plural exclusive and inclusive is *ki-mināw^a* and *nī-mināw^a* respectively; in the transitive verb "he—us," exclusive and inclusive is *ki-gunāw^a* and *nī-gunāw^a*. In these *mi* is the *m* suffix and *-gu-* the passive sign. Similarly Fox *ke-guwāw^a*, Menomini *ki-guwāw^a* "he—you (pl.)" are to be explained as without the *m* suffix which reappears in Menomini *ki-mwāw^a* "you (pl.)" intransitive, *ki-imwāw^a* "you—me" (*-i-* "me"; see *American Anthropologist*, l. c., p. 694). Just so in Ojibwa *ki-m* "you (pl.)" intransitive, *ki-im* "you (pl.)—me," but *ki-gowa* "he—you (pl.)" in which *go* is the passive sign and *ki-wa* the same as the possessive sign for the second person plural, animate and inanimate singular. It will be recalled that Ojibwa *ki-m* phonetically stands for *ki-mwa*. By the above I think I have made it clear that Dr Sapir's comparison of Yurok *-m* "thou" and Ojibwa *-m* in *ki-m* "you pl." intransitive of the independent mode, is not valid as different morphological elements are being compared. See also below.

As to the comparison of Ojibwa *-wa* in *ki-wa* "your" and Wiyot *kiluwa* "you," as long as this *wa* appears also in the Ojibwa possessive

¹ In a future paper I shall take this up systematically.

pronoun of the third person plural (and similarly in Fox), though not in Wiyot, it is in the highest degree probable that we are here again dealing with different morphological elements.

Wiyot *hu*, the third person possessive pronominal prefix is compared with Fox *w*-, etc. But in Wiyot this *hu*- also occurs in the first person plural, though the Yurok correspondent does not. Is it not doubtful if we are dealing with comparable morphological elements? Another reason for not considering the apparent correspondence convincing will be found below.

Dr Sapir thinks that, as some Yurok adjectives distinguish animate and inanimate, other evidence will show that such a distinction exists elsewhere in the language. If that were the case Dr Kroeber probably would have recorded it, as this feature is particularly easy to determine.

I do not deny a few Wiyot and Yurok morphological elements resemble Algonquian ones; for example, Wiyot *k*-, Yurok *qe*- "thy." But I do not think at present that we have any right to consider them as more than accidental. A number of such Wiyot and Yurok elements have resemblances in other languages. For example, the verbal pronoun of the first person singular in both Iroquois and Yurok is *k*, though in the former it is prefixed and suffixed in the latter. In Molala and Miwok it is *k*, and is suffixed; in Chitimacha it is *k*, *ki* under unknown conditions, but in both cases is suffixed. Molala *k-i'*, the independent pronoun of the second person singular, resembles Wiyot *k*-, Yurok *qe*- "thy," to say nothing of Algonquian correspondents in independent, possessive, and verbal pronouns. The subjective verbal pronoun for the second person singular in Yurok is *-m*; certainly this closely resembles Tsimshian and Chinook *m*-, Maidu *mī*, Yuki *mi*, Wappo *mi*, Miwok *mi'*, Pomo *ma*, Kalapuya *ma*-, as well as the corresponding Kalapuya independent pronoun *ma'*. The Yurok independent pronoun of the first person singular *nek* is close to Chinook *naika* and Coos *ne'xkan*. Wiyot *hu*-, the possessive pronoun of the third person, might easily be compared with Miwok (S. Sierra) *hu*-, and Tlingit *hu*-, the independent pronoun of the third person singular, and Tunica *hu*- "his." Again the Wiyot possessives *hu*- and *m*- casually resemble Hupa *xō*- and *m*-, though their respective usage is not the same. In Coahuilteco the possessive pronoun for the second person singular has two forms *xa*- and *m*-, the exact use of which is unknown; the former has a fanciful resemblance to Wiyot *k*-, Yurok *qe*-, and the latter to Yurok *-m*, the verbal subjective pronoun of the second person singular. In Wiyot the subjective verbal pronoun of the second person singular is *-as*, and in one Miwok dialect *-s*; in

Wiyot the subjective verbal pronoun of the first person plural is *-itak*; in Miwok *-tok*. It has long been recognized that *n* in the possessive, verbal (as subject), and independent pronouns of the first person singular is widely spread; examples are Chinook *n-* (verbal), Maidu *nī* (verbal), *niki* (possessive), Tsimshian *n-* (verbal), Coahuiteco *na-* (possessive), Yurok *ne-*, *no-*, Fox *ne-* (possessive and verbal), and similarly other Algonquian dialects. Languages as far apart as Wappo and Iroquois agree closely in the independent pronoun of the first-person singular: in the former it is *i*, in the latter it is *iʔ*.

Enough has been said to show the utter folly of haphazard comparisons unless we have a thorough knowledge of the morphological structure of the languages concerned. It is for this reason that I have refrained from endeavoring to compile a list of fancied lexicographical resemblances between Wiyot and Yurok with other languages than Algonquian ones, and a list of such similarities between Algonquian and other languages than Wiyot and Yurok.

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INTERNATIONAL CONGRESS OF AMERICANISTS

THE undersigned members of the Permanent Council of the International Congress of Americanists, basing their action on paragraph xv of the statutes of the Congress as adopted at Paris in 1900, feel obliged to make the following declaration:

At the closing meeting of the XVIII Congress, held in London on June 1, 1912, the following regulations were adopted in regard to the locality at which was to be held the XIX Congress in 1914:

IV. (a) An invitation to hold the meeting of the XIXth Congress at Washington was moved by Dr A. Hrdlička in the name of the Smithsonian Institution, and seconded by Professor H. Cordier.

Letters of invitation from the Smithsonian Institution, the George Washington University, the Catholic University of America, the Archaeological Institute of America, the Anthropological Society of Washington, and Georgetown University were read, and a list of members of the proposed Organizing Committee was presented.

Invitation accepted by acclamation. Mr W. H. Holmes, Dr A. Hrdlička, and Mr F. W. Hodge were named as organizers.

(b) An amendment: Mr A. Posnansky, as bearer of an invitation from the Government of Bolivia (and from the Geographical Society of La Paz) to hold the XIX Congress in La Paz, proposed the acceptance of this as an addition to the Session in Washington.

"Accepted unanimously."¹

Following these lucid and incontrovertible decisions, the Session of the XIX International Congress of Americanists is to be held this year in Washington, and is to be followed by a supplementary session at La Paz, Bolivia. The latter session was from the first conceived as a kind of larger excursion to follow the post-session excursion in the United States, and at which papers and discussions might be presented.

On the 24th of June, however, an undated invitation from La Paz reached a number of European Americanists, signed by a president and a general secretary of an organizing committee in La Paz, neither of whom appears to have been elected at the London session, which document contradicts the agreement of the London Congress in that it announces the La Paz Session as the *Second Session* of the XIX International Congress of Americanists, similar to the Second Session which, for important reasons and under exceptional circumstances, was held in 1910 in the City of Mexico, following the session in Buenos Ayres. In the present case such an assumption is in direct opposition to the clear meaning of the decisions rendered at the London Congress.

The undersigned members of the Permanent Council of the Congress of Americanists definitely declare, therefore, that in this year *only one authorized session* of the XIX Congress can take place, and that in Washington; that this session has exclusive charge of carrying out the regulations of the Congress as given in its statutes; and that besides the discharge of these obligations it is to decide on the place of meeting of the XX Congress, which is to convene in 1916. The *supplementary Session* at La Paz is free to arrange for scientific presentations and discussions, as well as additional excursions, and to publish its Proceedings. That Session will also be in a position to adopt resolutions, but not statutory conclusions.

This declaration will be submitted to the XIX Session in Washington.

Berlin, London, Versailles, and Wien, June 1914. H. Froidevaux, G. Hellmann, F. Heger, Sir Clements Markham, E. Seler, K. von den Steinen, W. Weekbecker.²

¹ *International Congress of Americanists, Proceedings of the XVIII Session*, London, 1912, page lix.

² Several of the members of the Permanent Council could not be reached, owing to absence on expeditions or residence in distant countries.

ANTHROPOLOGIC MISCELLANEA

Peabody Museum activities.—The operations of Peabody Museum of Harvard University during last year were made noteworthy by the beginning of the construction of the addition to the museum building, the original structure having been commenced in 1859. The activities of the Museum, however, were important in a scientific way also. Dr H. J. Spinden's memoir on *Maya Art*, which was published during the year, embodies in its 285 pages, with numerous illustrations, the results of three years of research while the author was a graduate student. Dr A. M. Tozzer finished the preparation of his memoir on *Nakum* and was appointed to represent Harvard University as director of the International School of Archeology and Ethnology in Mexico for the season 1913-14. Dr R. E. Merwin prepared a part of his report on the exploration of a portion of Campeche and of that portion of Quintana Roo north of the Rio Hondo and including descriptions of several important ruins. Accompanied by Mr C. W. Bishop, Dr Merwin will conduct another expedition to Central America during the season 1913-14. Mr A. V. Kidder, associate curator of archeology, has continued his studies of the pottery of the Pueblo region. Mr C. C. Willoughby, assistant director, accompanied by Mr R. G. Fuller, made an examination in August, 1913, of the archeological remains in Tseonitsosi cañon and a portion of Chin Lee valley, northeastern Arizona, with a view of their future excavation. Mr Bruce W. Merwin was employed during the summer of 1913 in investigating a group of seven large mounds near Obion river in Henry county, Tennessee; three of these were excavated and found to be domiciliary and of three periods of occupancy. With the coöperation of the University of Nebraska, Mr F. H. Sterns, Hemenway fellow, gave special attention to the prehistoric habitation sites on the bluffs of the Missouri in Nebraska, three months being devoted to this work. A note by Mr Sterns on these interesting remains appeared in the last issue of this journal. Mr Ernest Volk continued his digging in the vicinity of Trenton, New Jersey, and a large amount of material was sent to the Museum, obtained principally from various deposits of gravel. "While some of these gravel specimens are probably artificially chipped," says Professor Putnam in his report, "the same problem is here as is now being so carefully studied in England and in Europe, as

to just what is man's work and what is nature's." Mr S. J. Guernsey, Hemenway assistant in archeology, in his studies of the archeology of the Charles River valley, has found a number of fire-holes at various points, and three Indian graves in Watertown, one of which was unusual in being walled or lined with stones. Mr Guernsey also explored two village sites on Martha's Vineyard, obtaining numerous collections therefrom. Dr Charles Peabody, curator of European archeology, made two trips to France, Italy, and England for the purpose of obtaining for the Museum additional specimens by personal exploration. The results of Dr Peabody's excavations at La Quina with Dr Henri Martin are described elsewhere in this journal. By the courtesy of Dr Sturge he was able to collect a number of paleolithic implements from the noted locality in Mildenhall, Suffolk, England. Dr Roland B. Dixon, curator of ethnology, was on sabbatical leave during the year, spending fourteen months in travel in Asia, during which time he was able to secure a considerable collection for the Museum. Dr Dixon journeyed twelve hundred miles through the northern Himalayas and along the borders of western Tibet, and after returning to India a visit was made to the Kasai and Nagas in Assam. He studied the various museum collections in India, and spent two months along the Chinese frontier in Upper Burma and the Shan States among the Kochin, Shan, and Palaung; the Museum collections in the Federated Malay States, Singapore, and Java were likewise studied and the most important archeological sites in the latter island visited. Mr Rudolph R. Schuller made an interesting discovery in the college library of two loose leaves which were recognized as a part of the long-lost work by Fr. Valdivia, published in 1607, in the little known language of the Millcayac Indians of South America. The importance of this work led to its publication by the Museum, with photographic reproductions of the four pages referred to.

University Museum Expedition.—A letter has been received from Dr Farabee giving the history of the South American Expedition of the University Museum of Philadelphia up until the time of writing, April 29. The letter was written at the Barbadoes and was the first one received for six months. During this period the party was in the unexplored forests of southern British Guiana and northern Brazil. The letter states that from December 16 to April 1 the party was among tribes of Indians which had never before seen white men and the information obtained was new to science. The tribes encountered are the following: Parikutu, Waime, Chikena, Katawian, Toneyan, Diow, Kumayenas, and Urukua-

nas. Besides these hitherto unknown tribes, the party passed through the territory of the Waiwais where collections were made and other valuable data obtained. The party, which consisted of Dr Farabee, Mr Ogilvie, and four Indians, reached the coast by descending the Corentyne river. They were suffering from fever at this time and reached Georgetown greatly reduced in strength. Dr Farabee went to the Barbadoes to recuperate and has since proceeded to Para to make preparations for his next journey into the interior. The University Museum has received the third consignment of ethnological specimens from the Amazon expedition, as well as 350 negatives and a large package of note books. Dr Franklin H. Church, physician to the Amazon Expedition, accompanied Dr Farabee until January 8. At this time Dr Farabee found it necessary to reduce the party owing to the increasing scarcity of food in the forest. He therefore despatched Dr Church with most of the Indians to return by way of Melville's ranch and Boa Vista to Manaos, and to carry with him the collections and notes made to that date. Dr Church arrived at Manaos on March 15, and from that point returned to the United States. He arrived at the University Museum with the photographs and notes on June 1.

American Museum Bequest.—Mrs Morris K. Jesup, who died on June 17, bequeathed \$5,000,000 to the American Museum of Natural History and made other bequests to public institutions amounting to \$3,450,000. In providing in her will for the American Museum of Natural History, Mrs Jesup said:

I give and bequeath to the American Museum of Natural History of the city of New York four million dollars (\$4,000,000) as a permanent fund to be known as 'The Morris K. Jesup Fund,' the income, and only the income, to be used in the purchase of specimens and collections and the expenses incident to and incurred in assisting scientific research and investigation and publication regarding the same, which the trustees of the museum shall regard as in its interests.

In a codicil, added to her will three years after the will was drawn, an additional \$1,000,000 is given to the Museum. Morris K. Jesup, who died on January 22, 1908, became president of the Museum in 1882, and devoted a large part of his time and energy to its interests. In his lifetime Mr Jesup gave more than \$1,000,000 to the Museum, and under his will it inherited an additional \$1,000,000.

Porto Rico Research.—The New York Academy of Sciences has begun a scientific study of the island of Porto Rico along the lines of geology, paleontology, zoology, botany, anthropology, and oceanography.

The Academy has voted \$1,500 a year for five years on this work, and coöperation with the Academy has been assured by the American Museum of Natural History and other scientific institutions. The anthropological research of the Academy is represented on the committee by Dr Franz Boas. In a recent number of *Science*, Dr Edmund Otis Hovey thus writes of the needs of anthropological work in Porto Rico, and it may be assumed that the research in this field of science will follow the suggestions there outlined: "The anthropology of Porto Rico offers an attractive field of study not only in the ethnology of the present inhabitants, but also and more particularly along the lines of archeology. Much material has been gathered from the surface, but a broad field is offered in the investigation of anciently inhabited caves and in the scientific working over of numerous kitchen middens."

Rev. A. G. Morice, O.M.I., M.A., the well-known historian and anthropologist, who has just been giving for the fourth year a course of anthropology at the University of Saskatchewan, has been unanimously elected the first Honorary Member of the Royal Canadian Institute, "in recognition of his eminent services to science by his researches into the ethnology and philology of the Western Dénés and other Indian nations of British Columbia embodied in numerous contributions which have enriched the Proceedings and Transactions of this Institute, and also by his studies for archeology and history shown by articles which have appeared in various scientific periodicals and by his *History of the Northern Section of British Columbia*," etc., as is stated in the official request for the title spontaneously made in his behalf to the council of the Institute. Father Morice had already been made the first Bachelor of Arts and the first Master of Arts of the University of Saskatchewan.

MR SYLVANUS G. MORLEY, formerly Central American Fellow of The School of American Archaeology of the Archaeological Institute of America, has accepted a position as research associate with the Carnegie Institution of Washington. Mr Morley has just returned from a five months' field season in Central America, where, with Dr H. J. Spinden, of the American Museum of Natural History, he visited the sites of Naranjo, Tikal, Seibal, Aguas Calientes, Ixkun, Ucanal, Yaxha, Chunvis, Altar de Sacrificios, Piedras Negras, and Quirigua, in Guatemala; of Yaxchilan and El Pabellon in Mexico; of Santa Rita Corozal in British Honduras, and of Paraiso in Honduras. Many new hieroglyphic texts were brought to light.

Alcée Fortier, professor of Romance languages in Tulane University, New Orleans, and author of numerous works on history and folk-lore, died on February 14. Professor Fortier was president of the Modern Language Association in 1898, of the American Folk-lore Society in 1894, and of the *Athénée Louisianais* since 1892; he was also an officer d'Académie, a chevalier de la Légion d'Honneur, and a member of various other literary and learned organizations. He published *Bits of Louisiana Folk-lore* (1888), which was expanded into *Louisiana Folk-tales*, published in 1895 as volume II of the *Memoirs of the American Folk-Lore Society*. He was also the author of a *History of Louisiana* (1904) and a *History of Mexico* (1907).

AN expedition under the leadership of Miss Mary A. Czaplicka, of Somerville College, Oxford, left Moscow in May for the Yenisei river in order to study the physical and social anthropology of the Tungus and Ostiak. Miss Czaplicka has been commissioned by the University of Oxford and the Academies of Moscow and of St Petersburg, and the other members of the party represent different institutions. Mr Henry A. Hall, of University Museum, Philadelphia, will undertake the anthropometric work. It should be noted that the Ostiak of the Yenisei are distinct from the Yenisei of the Ob, who have already been studied by members of the Jesup North Pacific Expedition.

WE regret to note the death of Jean Chaffanjon on September 7, 1913, at Tjitlim, district of Riouw, in the island of Bintang, Dutch Indies, aged 59 years. Chaffanjon was noted particularly for his studies of the archeology and ethnology of the Orinoco region of South America between the years 1884 and 1890, but he also traveled and made important anthropological collections in central and northern Asia.

SIR ARTHUR EVANS has presented to the museum of the University of Cambridge the last instalment of a set of archeological objects selected from the collections of his father, the late Sir John Evans. The gift consists of 121 specimens ranging in date from prehistoric times to the eighteenth century. All the specimens were found in Cambridgeshire and the adjacent counties.

MR M. R. HARRINGTON, assistant curator of the American section of the University Museum of Philadelphia, has started on a trip to Oklahoma where he will spend the summer making studies and collections among the Ponca and Delaware Indians.

THE disastrous fire at Salem, Mass., spared the Peabody Museum and the Essex Institute. The house of Dr E. S. Morse, with its valuable papers, drawings, books, and collections, also fortunately escaped.

PROFESSOR MARSHALL H. SAVILLE has departed for South America for the purpose of making archeological researches in Ecuador and Colombia in the interest of the Heye Museum of New York City.

MISS ELLEN CHURCHILL SEMPLE, of Louisville, Ky., author of works on anthropogeography, has received the Cullom Medal of the American Geographical Society.

WE regret to record the death of Professor Doctor Paul Ehrenreich, privat-dôcent in the Royal University of Berlin, on April 14th, in his fifty-ninth year.

REV. STEPHEN D. PEET died at Northampton, Mass., on May 24. He was founder, editor, and manager of the *American Antiquarian* from 1878 to 1910.

THE archeologist, M. Georges Perrot, permanent secretary of the Academy of Inscriptions and Belles Lettres of Paris, died on June 30.

THE Drapers' Company of London has made a grant of £200 a year for three years for anthropology at the University of Cambridge.

MR C. W. BISHOP has been appointed assistant curator of the section of general ethnology of the University Museum of Philadelphia.

DR J. G. FRAZER, author of *The Golden Bough*, was knighted on the occasion of King George's birthday, June 22.

As this belated issue of the AMERICAN ANTHROPOLOGIST is passing through the press, the Organizing Committee of the XIX International Congress of Americanists which was to assemble in Washington, October 5-10, after asking an expression of opinion of all available members has decided to postpone the session until such time as conditions in Europe may justify.

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AMERICAN ANTHROPOLOGICAL ASSOCIATION
TO THE NINETEENTH INTERNATIONAL
CONGRESS OF AMERICANISTS TO
HAVE BEEN HELD AT WASH-
INGTON IN OCTOBER, 1914¹

CONTENTS

Primitive American History. By JOHN R. SWANTON and ROLAND B. DIXON.....	376
Areas of American Culture Characterization Tentatively Outlined as an Aid in the Study of the Antiquities. By W. H. HOLMES. (Plate XXXII).....	413
Material Cultures of the North American Indians. By CLARK WISSLER. (Plate XXXIII).....	447
<i>(Continued in the next issue)</i>	

¹ Owing to the unfortunate condition of affairs in Europe it became necessary to postpone the Nineteenth Session of the Congress, but it was deemed wise to issue this number of the AMERICAN ANTHROPOLOGIST in the form in which it was originally designed to commemorate the second session of the Congress to be held in the United States. The remaining papers will appear in the October-December number.

PRIMITIVE AMERICAN HISTORY

BY JOHN R. SWANTON AND ROLAND B. DIXON

CONTENTS

I. Introduction.....	376
II. Indians of the Muskogean Stock.....	378
III. Other Southeastern Indians.....	381
IV. Indians of the Siouan Stock.....	381
V. Indians of the Iroquoian Stock.....	380
VI. Indians of the Algonquian Stock.....	391
VII. The Beothuk.....	395
VIII. The Eskimo.....	395
IX. Indians of the Caddoan Stock.....	396
X. Indians of Southern Texas.....	398
XI. The Kiowa.....	398
XII. Indians of the Athapascan Stock.....	398
XIII. Indians of the North Pacific Coast.....	402
XIV. The Kutenai.....	404
XV. The Shahaptians and the Indians of Western Oregon.....	404
XVI. Indians of California.....	405
XVII. Indians of the Shoshonean Stock.....	407
XVIII. Indians of the Piman Stock.....	400
XIX. The Pueblo Indians.....	409
XX. Conclusion.....	410

I. — INTRODUCTION

THE history, in the strict sense of that term, of the American Indians north of Mexico is contained in writings of a conquering race and is confined entirely to the last four centuries. However, archeological investigations in classical and oriental lands have shown us that our knowledge of the history of a country does not begin with the earliest writings that have come down to us, nor yet with its most ancient inscriptions, but may be carried back far beyond them by the other relics of its culture and by studies of the living descendants of the people who possessed it. In investigating still existing peoples like the American Indians we can appeal in the first place to their traditions which, although sometimes noncommittal and frequently misleading, gain in weight

when recorded by several different persons and when taken in connection with other data. These other data consist of the information yielded by archeological and ethnological investigations, especially when they are applied to classification, whether by physical characteristics, language, or general culture. For even though we take the most extreme polygenetic position, the fact that certain tribes now separated belonged to one physical, linguistic, or cultural group indicates that there has been some kind of contact between them, and this involves true historical facts, although they are not commemorated in a single line of writing, or by a single monumental inscription.

New information regarding the tribal movements of our Indians can come from only two sources: the discovery of new manuscript sources of information or of sources published but overlooked, and information obtained by field workers directly from the Indians themselves. As the latter is partly unpublished and is at any rate given out merely as incidental to other investigations, and the former is widely scattered, we shall not attempt a historical study of the growth of our knowledge on this subject nor include a bibliography, but confine ourselves to an attempt to link together the bits of information now available into a conservative statement of the results to which our studies appear to have led.

In the absence of a satisfactory classification of native North Americans on a physical basis it will be most convenient to consider them as grouped into linguistic stocks, premising at the same time that we thereby admit the historical significance of that classification. It will, however, be difficult for us to do otherwise.

Roughly speaking, American linguistic stocks north of Mexico may be distinguished into an eastern and a western division, the former covering the eastern woodlands and most of the plains, the latter the grand plateau, the Pacific littoral, the southwestern arid region, and the plains of the extreme north, westward of Hudson bay. We will begin with the first of these, and with those stocks which occupied the southernmost part of the eastern area, of which the most important is known as Muskogean.

II. — INDIANS OF THE MUSKHOGEAN STOCK

The Muskogean stock consists in the first place of the Muskogean proper and of a small branch typically represented by the Natchez. The former embraced at one time about thirty-five groups sufficiently distinct to be called tribes, but many of these were small and evidently branches of the larger groups. The tribes of real importance were the Choctaw, Chickasaw, Chakchiuma, Muskogee, Alabama, Koasati, Hitchiti, Apalachee, and Yamasi. Anciently there appears to have been another in the western part of the Muskogean territory of which in historic times only fragments remained, known as the Napiša, Acolapissa, and Quinipissa. This tribe, the Choctaw, the Chickasaw, and the Chakchiuma spoke closely related dialects, and the traditions which have been preserved from them show that the fact was clearly recognized. The more recent legends affirm that the ancestors of at least the Chickasaw and Choctaw had emerged from the ground at the great sacred "mother hill" of Nanihwaya, in Winston county, Mississippi, between the ancient territories of these two peoples.¹ But there is an older form of the narrative according to which these tribes and their allies reached Nanihwaya from the westward and settled there only for a time before separating, the Chickasaw to the north, the Choctaw to the south. Adair, who seems to give us the very oldest form of the story, says: "The Chicasaw, Choktah and also the Chokchooma, who in process of time were forced by war to settle between the two former nations, came together from the west as one family."² Dr Gatschet notes several other migration legends from both Chickasaw and Choctaw, all to the same general effect.³

The Alabama language is very close to Choctaw, but our record of Alabama traditions is not so complete. According to Sekopechi, an old Alabama cited by Schoolcraft,⁴ his people came "from the ground between the Cahawba and Alabama rivers." The late

¹ Gatschet, *Creek Mfg. Leg.*, i, 106. *Miss. Hist. Soc.*, II, 229-301; IV, 269-270. Cf. Du Pratz, *Hist. de la Louisiane*, II, 216-217.

² Adair, *Hist. N. A. Ind.*, p. 352.

³ *Creek Mfg. Leg.*, i, 219-222. *Miss. Hist. Soc.*, II, 228-9; VIII, 521-549.

⁴ *Hist. Ind. Tribes*, i, 266 sqq.

Dr Gatschet was told a somewhat similar story, only the rivers mentioned were the Alabama and the Tombigbee.¹ Those Alabama now living in Texas tell a story of having come westward across the Atlantic, but this has evidently been built up partly from what the whites have told them of their own origin, and partly from the subsequent westward emigration of the Alabama themselves. The general drift of these people in accordance with their own traditions would thus seem to have been from west to east like that of the Choctaw, and this appears to be confirmed by the encounter which De Soto had with some of them between the Chickasaw country and the Mississippi river. There is no good reason to doubt that the "Alibamo" of his chroniclers refers to the tribe we are now considering. No distinct Koasati migration legend has been preserved, but this tribe must long have been associated with the Alabama, because the languages of the two peoples are closely akin.

According to a story told Dr Gatschet by Chicote and G. W. Stidham the Hitchiti originated from a canebrake on the sea coast,² but those people later called Hitchiti embraced a number of tribes some of which had actually come into the Creek country from the shores of the Gulf of Mexico. Other Hitchiti claimed that their ancestors had fallen from the sky.³ From an old doctor belonging to these people, however, the writer obtained an origin legend almost parallel with that of the Creeks, relating how they had come from a country far in the west and had followed the sun until they came out upon the ocean. As this old man also claimed to be descended from Yamasi Indians the story possibly embodies a Yamasi legend rather than that of the Hitchiti proper. From other southeastern Muskogean, such as the Apalachee, no legend dealing with tribal movements has been preserved, but we know that the languages of most of them belonged to the same group as Hitchiti and that they were more closely connected with Choctaw than with Muskogee.

¹ MS., Bur. Amer. Ethnol.

² *Creek Mig. Leg.*, t. p. 78.

³ *Ibid.*, p. 77.

Of the migration legends of the Muskogee, or Creeks proper, several versions have been preserved. The longest and best known is that told to Governor Oglethorpe in 1735 by Tchikilli, "head chief of the Upper and Lower Creeks."¹ Another well known version was collected by United States Indian agent Benjamin Hawkins,² and a third, with modifications and exaggerations, by a French adventurer, Milfort.³ But there are several notices besides to much the same effect, and one of the authors of this paper has collected four or five narratives. The origin myth of the Tukaba'tci Creeks differs, however, in bringing that tribe from the north.⁴

A few words may now be added regarding the Natchez group of Muskogean. This consisted, so far as we now know, of three tribes, the Natchez, Taensa, and Avoyel. Pénicaut is authority for the statement that the last of these had come from the Natchez, and he is probably correct;⁵ that the Taensa and Natchez had not been separated long is attested by close resemblances in language and institutions. While we have no migration legend from the Taensa, two have been preserved from the more important Natchez tribe. One, the somewhat pretentious narrative of Du Pratz, brings them from the southwest,⁶ while the shorter account, obtained by the missionary de la Vente, assigns to them a north-western origin.⁷ These at least suffice to show that the Natchez had notions regarding the quarter from which they had come similar to those of the Muskogean tribes already enumerated.

It is easy to lay too much weight on the importance of oral traditions, which, although not absolutely false, may have originated in movements much less important than those which they profess to relate, or may have been true only of a limited number of people such as a ruling class. Nevertheless there is every reason to believe that they do indicate an actual drift of population which

¹ Gatschet, *Creek Mig. Leg.*, I, pp. 237-251.

² *Ga. Hist. Soc. Coll.*, III, 81-83.

³ *Mémoire*, pp. 229-265.

⁴ Tuggle coll., *Bur. Amer. Ethnol.*

⁵ Margry, *Découvertes*, V, 497.

⁶ Du Pratz, *Hist. de la Louisiane*, III, 62-70.

⁷ *Compte-Rendu Cong. Internat. des Amér.*, 13th sess., I, 37.

has a historical value. Roughly speaking, the history of the Muskogean stock appears to have been something like this: At least a part of the population now represented by the speakers of the languages of this group moved into the Gulf region from the north-west, being already or soon coming to be divided into a northern and a southern group, the former represented by the true Muskogee, the latter typically by the Choctaw. Later the Muskogee moved southeast and came in contact with the eastern tribes of the southern group with some of whom an alliance was formed, and the resulting confederacy finally destroyed most of those tribes—such as the Yamsi and Apalachee—which did not unite with it. The Chickasaw were a northern branch of the Choctaw but more closely associated with the Creek confederacy with which they might in time have become united. The Natchez group was evidently modified by very intimate contact and probably mixture with non-Muskogean tribes. While their position would indicate that they represented the last wave of immigration there are reasons for believing that they had been among the first, a branch which settled to one side while the other tribes moved on eastward.

III.—OTHER SOUTHEASTERN INDIANS.

No tradition has been preserved regarding the origin of the Timucua, Calos, Tequesta, and Ais Indians of Florida, and we have no clue to their past history other than a distant resemblance between Timucua, the only language that has been preserved to us, and the Muskogean dialects. A patient study of this language and comparison with those spoken north of it and in the West Indies would probably yield rich returns.

Upon Grand lake, in southern Louisiana, and a network of bayous connecting this body of water, the Mississippi, and the Gulf of Mexico, was the little Chitimachan stock consisting historically of only one tribe. Anciently they and the Natchez were on terms of closest intimacy, and for that reason Du Pratz supposed that their languages were the same. But, while there are some words common to the two, a superficial comparison fails to show any more intimate relationship, though it is quite possible that a

closer connection may be revealed by future studies. According to the only Chitimacha origin myth which has been preserved, this tribe reached the country about Grand lake from Natchez, the story being thus the direct antithesis of the Natchez legend given us by Du Pratz.¹

Still farther west, from Vermilion bayou to Galveston bay and a little beyond, were a number of small bands of Indians generally known to the Choctaw as Atakapa ("man eaters") and now classified as the Atakapan stock. Their origin myth states that they came out of the sea but that later there was a flood which destroyed all mankind except a few persons who lived upon a high ridge,— "that of San Antonio, if we may judge," adds our informant.² The Opelousa and Akokisa seem to have been eastern and western branches respectively of this stock, but we know little more about them than the names. The Chitimacha and Atakapa languages present many features in common, and some of these are shared by the languages of the Muskogean group. Taken in connection with their several migration legends a suggestion is contained here which may yield interesting results to future investigation.

Along the lower course of Yazoo river and scattered some distance both to the north and south of it, as well as westward beyond the Mississippi, was another small stock, the Tunican, consisting in historic times of probably four or five tribes, the language of only one of which has been preserved. While this language contains features suggestive of Muskogean, Chitimachan, and Atakapan, there are striking differences. No migration legend applying to prehistoric times has been preserved, but since the "Tunica old fields" were in northwestern Mississippi at a considerable distance from historic Tunica seats, we may infer that they had moved from that place to the Yazoo at an earlier period. This inference is strengthened by Tonti's statement that "the Yazou are masters of the soil,"³ as if their neighbors the Tunica, Korea, etc., had come in from elsewhere. The Tiou, a tribe probably belonging to this

¹ Bull. 43, B. A. E., p. 336.

² Ibid., p. 363.

³ French, *Hist. Coll. La.*, 82-83, 1846.

stock but incorporated with the Natchez, had been driven south by the Chickasaw.¹ A northern origin for many of these people is thus indicated. It is probable that they played an important part in the history of the lower Mississippi valley before the coming of the whites.²

The Uchean stock consisted of a large body of Indians on Savannah river and a smaller band on the middle course of the Tennessee. No migration legend has been recorded from them, yet there is some ground for thinking that they had moved into this country from a more northerly habitat in the latter part of the sixteenth century or the early part of the seventeenth. At any rate De Soto, Pardo, and other Spanish explorers between 1539 and 1567 mention no tribe that can be identified with them, while the English colonists of South Carolina in 1670 speak of them at once as a very powerful people.³

IV.—INDIANS OF THE SIOUAN STOCK

When first encountered by Europeans the great Siouan linguistic family occupied two large and two small areas. Of the former one lay along the eastern skirts of the Appalachian mountains, between them and the tidewater region of the Atlantic coast, from about the great falls of the Potomac to Santee river, South Carolina. The second covered a vast extent of country westward of the Mississippi, extending southward to the mouth of Arkansas river and northward nearly to the Saskatchewan. Northwest it reached the Rocky mountains. The Winnebago about Green bay, Wisconsin, were cut off from the main body of western Siouans only in late times. The two detached bodies were both in what is now the state of Mississippi, one, consisting of the Biloxi, on the lower course of Pascagoula river, the other of the Ofo Indians on the lower Yazoo. No migration legends have been preserved from these last, and beyond two slight clues we have only the language upon which to build a theory of origin. One of these clues is the appearance on the De Cresnay map of 1733 of a place called "Bilouchy," on

¹ Du Pratz, *Hist. de la Louisiane*, II, p. 223.

² *Bull.* 43, B. A. E., pp. 306-336.

³ *Handbook of Am. Indians. Bull.* 39, B. A. E., article *Westo*.

Alabama river near what is now known as Yellow Bluff, Wilcox county, Alabama.¹ Either the Biloxi once had a camp at this place or the tribe as a whole had occupied it in the course of its migrations. If this latter hypothesis is correct it would point to a northeastern origin for them. The other hint is furnished us in a legend reproduced by Schoolcraft purporting to recount the past history of the Catawba, the most prominent of the Siouan tribes of the east. The gist of this story is that the Catawba formerly lived in Canada and were driven thence by the French and the Mohawk. They then settled in the valley of the Ohio where they divided into two sections, part moving into the piedmont region of northern South Carolina while part went away with the Chickasaw and the Choctaw.² The former home in Canada and the part played by the French as well as the late date assigned to such important movements, the middle of the seventeenth century, are features that must be rejected; but careful examination leads to the belief that they have been attached to a real native tradition. The substance of this tradition probably was that the Catawba had once lived farther toward the north or northwest where they had been so harassed by Iroquoian or other peoples that they were impelled to move on southward, and that a part of them had separated and had gone to live near the western Muskogean tribes. It is not a little curious, to say the least, that we now know of one Siouan tribe, the Ofo, which did live near the Chickasaw, and another, the Biloxi, which lived near the Choctaw, and also that the languages of the two resemble rather the dialects of the eastern Siouan group than those of the much nearer western Siouans. It should be noted, however, that this resemblance is rather with the Tutelo and their neighbors than with the Catawba.

A northwestern origin, not alone for the Catawba but for the remaining eastern Siouans as well, is confirmed from two other sources. In his *History of Carolina*³ Lawson says, speaking of the Siouan tribes between Charleston and the Tuscarora country,

¹ Hamilton, *Colonial Mobile*, ed. 1910, map, p. 196.

² Schoolcraft, *Hist. Ind. Tribes*, III, pp. 293-296.

³ Page 279.

"When you ask them whence their forefathers came, that first inhabited the country, they will point to the westward, and say, where the sun sleeps our forefathers came thence." And it is certainly the eastern Siouan people specifically to whom Lederer refers when he says that the native inhabitants of western Virginia and Carolina affirmed that they came from the northwest "about four hundred years ago" and settled in their later country in obedience to an oracle.¹ This tale agrees in a rather remarkable way with the migration legends of the Muskogean tribes. All three of these notices tell substantially the same story, since the Ohio valley, which was roughly north from the Catawba, was west or northwest of some of the other eastern Siouans. It is worth noting that the Catawba are represented as having been preceded by the Cherokee.

Turning to the western divisions of Siouan tribes we find nearly all migration legends pointing in a precisely contrary direction. In this great group are contained several well marked subdivisions, one of which includes the Winnebago, Iowa, Oto, and Missouri, a second the Mandan, a third the Hidatsa and Crow, a fourth the Dakota and Assiniboin, and a fifth the Omaha, Ponka, Kansa, Osage, and Quapaw. Each of these is associated by language and by claims of a common origin.

The traditions we have regarding the group first mentioned are in substantial agreement. Perhaps the most complete is that given by Maximilian, obtained originally by Major Bean, an Indian agent, from an old Oto chief. According to this, "before the arrival of the whites a large band of Indians, the Hotonga ('fish-eaters'), who inhabited the lakes, migrated to the southwest in pursuit of buffalo. At Green Bay, Wis., they divided, the part called by the whites Winnebago remaining, while the rest continued the journey until they reached the Mississippi at the mouth of Iowa river, where they encamped on the sand beach and again divided, one band, the Iowa, concluding to remain there, and the rest continuing their travels reached the Missouri at the mouth of Grand river. These gave themselves the name of Neutache ('those

¹ Lederer, *Discoveries*, p. 3.

that arrive at the mouth'), but were called Missouri by the whites. The two chiefs, on account of the seduction of the daughter of one by the son of the other, quarreled and separated one from the other. The division led by the father of the seducer became known as Waghtochtatta, or Oto, and moved farther up the Missouri."¹ The main features of this legend are reproduced in the Iowa origin myth given in Schoolcraft,² but it is peculiar in bringing the Winnebago to Green bay from some northeastern region, and this is the only migration feature in the tradition which may fairly be doubted. There are reasons, traditional and archeological, for believing that the Winnebago had been in Wisconsin for a very long period in pre-columbian times.

The early history of the Mandan Indians has been obscured by wild speculations based on a real or supposed lightness of complexion on their part and an attempt to identify them with the descendants of hypothetical Welsh colonists under Prince Madoc. In pursuance of that pleasing but absurd theory Catlin traces them back down the Mississippi river, and up the Ohio, until he lands them in what is now the state of Ohio, which they are supposed to have reached via the Ohio and Mississippi rivers.³ Like others since his time he was misled, not unnaturally, by the traditions of the people themselves which refer their origin to an underground village farther east near the shores of a big water. Nowadays they appear to identify this water with the ocean, and even Maximilian says, "They affirm that they descended originally from the more eastern nations, near the sea coast."⁴ But, as we have seen, the eastern Siouans do not represent themselves as having started upon the coast but inland, and it is more likely that the big water of the Mandan was one of the great lakes. At any rate, if Maximilian can be relied upon, Mandan tradition indicated the mouth of White Earth river as the point where they first reached the Missouri,⁵ and from which they moved successively to the Moreau,

¹ *Travels in the Interior of N. America*, Appendix No. 1.

² Schoolcraft, *Hist. Ind. Tribes*, III, pp. 256-261.

³ *N. Am. Indians*, II, pp. 259-261.

⁴ Maximilian, *Travels in the Interior of N. Am.*, p. 335.

⁵ *Ibid.*, p. 366.

Heart, and Knife rivers, and finally to Fort Berthold where the remnant is now living. The mouth of White Earth river is almost due west from the Winnebago country, and this fact, taken in connection with the "big water" and a supposed linguistic relationship to Winnebago, has led some to believe that the origins of the two peoples were bound up together. Final judgment must be suspended until a more careful study of their language has been made.

The traditions of the Hidatsa also point to a lake, and this has been identified by some with Devil's lake, N. Dak. According to the story they migrated southwest from this place until they came to the Missouri which they reached at the mouth of Heart river where the Mandan were then living.¹ From that time on their history and that of the Mandan runs on together. A closely related tribe were the Amahami which were finally incorporated with them and had probably shared their fortunes for a long time previously. Some time after the Hidatsa reached the Missouri part of the tribe separated and moved out upon the plains about the upper Missouri where they afterward came to be known as Crows.²

When first known to Europeans the home of the Dakota seems to have been in central Minnesota, extending from Mille Lacs and the neighboring parts of the Mississippi down as far as the mouth of the Minnesota. Westward they probably did not reach much if any beyond the present boundaries of Minnesota state. After the Chippewa obtained guns, if not before, they began pressing upon the Dakota bands, drove them from Mille Lacs, and pushed them continually westward. Partly for this reason and partly perhaps owing to the attraction offered by the herds of bison, the western bands crossed the Missouri and in time occupied all of what is now South Dakota along with much of North Dakota as well. The Assiniboin are a northern branch of the Dakota and differ little from them in speech. Tradition affirms that they separated from that part of the Dakota known as Yanktonai,³ and this appears to be confirmed to some extent by linguistic evidence. If not originally

¹ Matthews, *Ethnol. and Philol. of the Hidatsa Indians*, p. 36 et seq.

² *Ibid.*

³ *15th Ann. Rep. B. A. E.*, p. 222.

caused this division was at least stimulated by the English trading posts on Hudson bay from which the Cree Indians were enabled to obtain firearms to the disadvantage of their southern neighbors. By withdrawing from the other Dakota and allying themselves with the Cree the Assiniboin were enabled to share some of the advantages of this trade. Tradition does not take us much back of the region indicated. Riggs states that some of the Dakota could trace their history as far back as the Lake of the Woods,¹ and from this fact and the general tradition of a northeastern origin it has been assumed by some that they originally resided northward of Lake Superior. It is also said that Chippewa tradition makes their first meeting place with this tribe at Sault Ste Marie, but, even if this were so, it would not prove that the Dakota ever lived north of the lakes.

A rough summary of the traditional origin of the Omaha, Ponka, Kansa, Osage, and Quapaw is to the effect that these tribes came westward to the mouth of the Ohio river as one people, that the Quapaw separated at that point, going down the Mississippi, and that the rest moved up the Missouri, resolving themselves gradually into the Osage, Kansa, Omaha, and Ponka in about this order.² No doubt this is to some extent an *ex post facto* explanation, but all of these tribes do actually constitute one linguistic group, and there is reason to believe that they at one time occupied a conterminous area farther east. That the Quapaw moved down the Mississippi much as indicated is shown by other evidence. Thus the Jesuit missionary Gravier says that the Ohio was called "the river of the Akansea [Quapaw], because the Akansea formerly dwelt on it."³ Another missionary notes that his party passed a small stream falling into the Mississippi somewhat lower down upon which this tribe had formerly dwelt. In his *Journal Historique de l'Établissement des Français à La Louisiane* La Harpe says that "the nation Alkansa is so named because it is sprung from the Canzès established on the Missouri,"⁴ and in the report of his

¹ Handbook Am. Indians, art. Dakota, p. 39.

² *3d Ann. Rep. B. A. E.*, pp. 211-212.

³ Shea, *Early Voyages up and down the Miss.*, p. 120.

⁴ Page 317.

Arkansas river expedition reproduced in Margry he repeats the same statement, adding that they had since adopted the name "Ougapa" [Quapaw], and that linguistically they were connected with the Osage.¹

The several Siouan groups suggest in their situations a broken semicircle and it is therefore not surprising to find that their traditions point to a central region within this. The region thus indicated would seem to be that included in Illinois, Indiana, southern Wisconsin, and perhaps western Kentucky. We can determine it only in general outline and perhaps it included still more territory.

V.—INDIANS OF THE IROQUOIAN STOCK

The Iroquoian tribes when first discovered formed three principal divisions, all in the eastern parts of the present United States and in the provinces of Ontario and Quebec. In the valley of the St. Lawrence and about Lake Simcoe southeast of Georgian bay were four allied peoples later classed as Hurons. In western New York, along the north shore of Lake Erie, and in portions of Michigan and Ohio were the Neutral nation, or rather confederacy; east of Lake Huron and south of Georgian bay were the Tionontati or Tobacco nation; south of Lake Erie the Erie confederacy; in central New York the great confederacy of the Iroquois or "Five Nations" (Seneca, Cayuga, Oneida, Onondaga, and Mohawk); and southward of them the Conestoga, Susquehanna, and probably several other tribes extending down Susquehanna river to its mouth. The second group was located in eastern Virginia and North Carolina, and embraced the Nottoway of Nottoway river, Virginia; the Meherrin on Meherrin river; the Tuscarora, probably a confederacy of three tribes, on the Roanoke, Neuse, Taw, and Pamlico rivers; and probably the Coree or Coranine about Cape Lookout.² The third group consisted of the one great tribe known as Cherokee centering in the southern Appalachians and occupying portions of the present states of Virginia, North and South Carolina, Tennessee, and perhaps Kentucky, in later times northern Georgia and northern Alabama also.

¹ Margry, *Découvertes*, vi, p. 365.

² See Lawson, *op. cit.*, p. 286.

It is a striking fact that, in contrast with both the Muskogean and Siouan peoples, the migration legends which have been preserved from the Indians of this stock are meager and unsatisfactory. According to colonial documents the Meherrin were a band of refugee Conestoga which fled south after the destruction of that tribe by the Iroquois about 1675,¹ but one form of their name occurs in the census of Virginia Indians taken in 1669.² Thus it is evident either that some Conestoga had replaced an Algonquian tribe of similar designation or else that the tribe antedated the destruction of the Conestoga and the reputed influx of population at that time. Possibly, as Mooney suggests, an original small Iroquoian tribe was practically submerged by later immigrations of Conestoga. At all events the whole question of origin is left in uncertainty. When the first northward migration of Tuscarora took place after their defeat by the English in 1711-12 and the Five Nations were preparing to adopt them, several Iroquois chiefs are quoted as having said that the Tuscarora had gone from them long before and were now returned.³ Still we do not know whether there was a definite tradition that the Tuscarora had gone south from the place then occupied by the Iroquois, whether there was a general tradition of a common origin, the place of separation not being specified, or whether a common origin was merely inferred from similarity in language. So far as this evidence goes, however, it indicates a northern origin for the southeastern Iroquoian group.

Still less substantial evidence is to be had regarding the movements of the tribes of the northeastern group. We hear of an attack on the Erie by some western enemy in consequence of which they were forced farther east, displacing some tribes of western New York; but this may have been a local and temporary affair. Colden, Cusick, Morgan, and some other writers assert that the traditional home of the Iroquoians was north of St Lawrence river. There is reason to believe, however, that the tales on which they base this opinion have been colored by more recent move-

¹ *Bull.* 22, *B. A. E.*, pp. 7-8.

² Neill, *Virginia Carolorum*, 326, 1846.

³ *Handbook of Am. Indians*, art. *Tuscarora*.

ments such as the expulsion of the Iroquoians of Hochelaga and Stadacona from the lower St Lawrence, the movement of the Tionontati and part of the Hurons south of Lake Erie after they had been broken up by the Iroquois, and the later movement of many Iroquoian tribes toward the southwest. Boyle shows the uncertain foundation on which this theory rests and cites evidences from Iroquois and other myths pointing in a diametrically opposite direction,¹ and most students of the Iroquois agree with him in his conclusions. The culture and social organization both point to a southern rather than a northern origin, and this is confirmed to some extent by archeological evidence and suggested in the morphological resemblance noted by Professor Boas between the Iroquois and Pawnee languages. It is also confirmed to some extent by the *Walam Olum* which represents the Iroquois and Delawares as having come east at the same time. In fact the sharp contrast in many particulars between these people and their Algonquian neighbors rather marks the northern Iroquoians as a wedge of southern tribes shoved northward at no very remote date.

If the Talligewi and Alligewi of Delaware tradition are the Cherokee as Mooney contends, this fact seems to indicate an earlier occupancy of the upper Ohio valley by that tribe. Hewitt, however, is of the opinion that the people referred to under those names were a part of the Miami. Be this as it may, Haywood is authority for the statement that the Cherokee formerly had a long migration legend bringing them from the upper part of Ohio river.² Dr Cyrus Thomas has brought together considerable archeological and other evidence which he believes to point in the same direction, and the gradual pressure of the tribe into Creek territory may also be cited. All things considered we may say that a more northerly habitat for the Cherokee in prehistoric times appears to be indicated.³

VI.—INDIANS OF THE ALGONQUIAN STOCK

The Algonquian, with one possible exception, was territorially the most widely extended of all North American stocks. All but three of

¹ Ann. Arch. Rep. for 1905, App. to Rep. of the Minister of Education, Ontario, pp. 146-156.

² Thomas, *The Cherokee in Pre-Columbian Times*, p. 7.

³ *Ibid.*

its dialects were comparatively near together, the exceptions being all in the far west—the Blackfoot of Montana, Alberta, and western Saskatchewan and Assiniboia, and the Cheyenne and Arapaho of our own great plains, the last the most divergent of all. The main group of dialects is further divided into those of the Cree, Chippewa, and Massachuset types. To the Chippewa group belong the Chippewa, Ottawa, Potawatomi, Illinois, and Miami; to the Massachuset type belong the Indians of Rhode Island, eastern Massachusetts, and a few others. The remainder are all of the Cree type. When first encountered by Europeans the Indians of this major group were almost cut in two by the Iroquoians, leaving one set of tribes along the Atlantic coast from the mouth of the St. Lawrence to Pamlico sound, and a northern and western group occupying much of eastern Canada above the Iroquoians and some of our present middle western states. We have few migration legends from the Atlantic coast tribes outside of the Delawares. The well known tradition of these last is given by Beatty and Heckewelder and in the famous *Walam Olum*,¹ according to which the Delawares came from the west, crossed a great river called Nemassipi, or Fish river, drove out a people called Talligewi, and finally pushed east to the river Delaware and the sea coast. Some investigators have sought to identify the Nemassipi with the Mississippi and some with the St. Lawrence; all that seems certain is that the tribe believed itself to have come from the west or north-west at about the same period as the Iroquois, Nanticoke, and Shawnee. The origin of the Nanticoke of Chesapeake bay is thus bound up with that of the Delawares, and from some scraps of the languages of the Conoy, Powhatan Indians, and Algonquians of Albemarle and Pamlico sounds it is probable that they belonged to the same group and had the same origin. As much may be said of the Mohegan, Mahican, and Pequot of eastern New York and western New England. No legends pointing to tribal movements seem to have been recorded from the Indians of the Massachuset group, but archeological and other evidence appears to point to immigration from the southwest. Rand says of the Micmac,

¹ Thomas, *op. cit.*, pp. 11-18.

that they always asserted that their former home was in the southwest also;¹ and Boyle, in quoting Rand, adds "the southwest origin was claimed by all the Abenaki tribes."² No authority is given for this last assertion, but it would probably follow if the corresponding legend of the Micmac were correct. Turning to the northern and western Algonquian group we find that the Naskapi believed they had been driven into the inhospitable regions of northern Labrador by the Iroquois.³ The Cree and Montagnais appear always to have occupied much the same region as that in which we find them today, though the latter have displaced Eskimo from the north shore of the Gulf of St Lawrence, while the former have extended themselves somewhat to the north and west. According to our earliest records the Sauk Indians once lived in the neighborhood of what is now Saginaw bay and later moved or were driven beyond Lake Michigan, to the west of the Winnebago. There is slight evidence pointing to a similar early location for the Fox Indians, but it is by no means as definite. Nevertheless the languages of the two tribes are so nearly related that their close association at some period in the not distant past can not be doubted. Another language belonging to the same group is Kickapoo, and Shawnee is but little removed. The traditions of the last point to the north.⁴ The Menominee appear to have lived long in the region where they are still to be found; at least no migration tradition has been recorded from them. From their linguistic connections it is probable that the Illinois and Miami had moved, like the tribes just considered, from north to south, and this is to some extent confirmed by the earliest historical references to them, though no actual migration traditions have come down to us. When we first hear of the Illinois some of them were in Wisconsin, some, including the Kaskaskia, in northern Illinois, while the Metchigamia had recently migrated much farther south into the present Arkansas. The Miami also appear to have drifted from southern

¹ Ann. Arch. Rep. for 1905, App. to Rep. of the Minister of Education, Ontario, p. 154.

² Ibid.

³ 11th Ann. Rep. B. A. E., p. 267.

⁴ Trans. Kansas State Hist. Soc., x, 383.

Wisconsin toward the southeast as far as southwestern Ohio. The Monsopela, who probably belonged to this group though we know very little about them, were driven out of Ohio or Indiana by the Iroquois and settled far down the Mississippi, finally uniting with the Taensa.¹ When we first hear of them the Potawatomi were in the lower peninsula of Michigan, but the Ottawa now found there have moved over in historic times from Manitoulin Island and the neighboring shores of Lake Huron. The Chippewa now inhabit both shores of Lake Superior, but they entertain a general belief that they once lived farther toward the east. Within historic times they have driven the Dakota from Mille Lacs, and this may have been only a late stage in a very much older aggressive movement, since they are said to have had a tradition that they first encountered the Dakota at the Sault. If any reliance could be placed upon this story it would indicate that they were at one time living north of Lake Huron, though we may discount Warren's belief that their original home was on the Atlantic coast. Some of this western migration was, however, due to the acquirement of firearms by the eastern tribes and a consequent temptation to take advantage of those farther away who had not yet obtained them. Upon the whole we may perhaps consider the territory of the true Algonkin, who belonged to this group and lived between Ottawa river and Georgian bay, as lying nearest the center of the most ancient region occupied by Indians of the Chippewa division.

According to Mackenzie, Maclean, and Grinnell the origin legends of the Blackfoot point toward the east or north, but this has been disputed by other writers.² That the nucleus of the tribe was Algonquian there can be no doubt, but it is equally evident from the language that they have been seriously influenced by other peoples. From the first fact a presumption is raised that the larger portion of the people now known as Blackfoot had moved westward. This is as far as we can go at the present time. Cheyenne tradition carries that tribe back to Minnesota river and

¹ Margry, *Découvertes*, 1, p. 566.

² For an extended discussion see Wissler, *Anth. Papers Am. Mus. Nat. Hist.*, vol. V, pt. 1, pp. 15-18.

thus to the neighborhood of other Algonquian peoples.¹ At some prehistoric period the Arapaho and Atsina separated from some common body the home of which is unknown though there are scanty indications pointing to the neighborhood of Red river.

VII. — THE BEOTHUK

Newfoundland was formerly occupied by a people called Red Indians or Beothuks. The remnant of their language preserved to us shows some Algonquian affinities, but it varies so greatly that for the present it has been thought best to consider it an independent stock. In the first half of last century these Indians were exterminated by the whites and Micmac who took their places. It is believed that some escaped to Labrador, and that there were a few survivors has been proved by Dr Speck who had the good fortune to meet an individual descended from the Beothuk tribe. As an independent people, however, they have been long extinct. Willoughby inclines to the opinion that there may have been some connection between the Indians of this tribe and the "red-paint people" of Maine.² If this could be demonstrated it would extend the territory and increase the prehistoric importance of the Beothuk very considerably.

VIII. — THE ESKIMO

The Esquimauan stock occupied a long, narrow fringe of shore from the eastern coast of Greenland and the northern side of the Gulf of St Lawrence to the easternmost points of Siberia and southward on the Alaskan coast as far as Copper river. The Aleut of the western portion of Alaska peninsula and the Aleutian islands constitute a subgroup of the same stock, offering many points of divergence from the normal Eskimo. Formerly it was customary to separate the people of this stock from all other Americans and to assume a more intimate connection between them and the Ural-Altaic peoples of Asia. Nevertheless the language of the Eskimo is distinctly American in type. Moreover traditional and ethnological evidence alike point to a comparatively recent coloni-

¹ Mooney, *Mem. Am. Anthr. Assoc.*, vol. 1, pt. 6, pp. 363-4.

² Willoughby in *Arch. and Eth. Papers Peabody Museum*, vol. 1 (No. 6), pp. 50-52.

zation of Siberia from the American side,¹ and it seems certain that the Aleutian islands were also occupied from Alaska, since the Commander group, natural stepping stones between the Aleutians and Asia, were found uninhabited by their Russian discoverers, and they were the refuge of the sea cow, sure to have been exterminated had the islands been occupied for any considerable period.² Again the culture and mythology of the Alaskan Eskimo are strikingly different from those of the typical Eskimo farther east. It is, furthermore, unlikely that Siberia should have remained uncolonized until after all of the Alaskan coast afterward held by the Eskimo had been settled, and, if that occupancy was comparatively recent, the occupancy of the Alaskan coast south of Bering strait was probably recent also. From Norse chronicles we know that the Eskimo occupancy of Greenland began in the fourteenth century, and studies made by Thalbitzer on the languages of this stock indicate that the Labrador tribes also moved into their country from the west.³ Thus the evidence so far collected points to an expansion outward from some middle region, between Baffin land and the Mackenzie river.

IX.—INDIANS OF THE CADDOAN STOCK

The earliest inhabitants of our central and southern plains beyond the Missouri belonged to the Caddoan stock, of which, in early historic times, there were three divisions. The largest of these covered most of northwestern Louisiana, southwestern Arkansas, southern Oklahoma, and northeastern Texas. It consisted of a large body of closely related people from which the stock itself derives its name of Caddo, the Wichita and their allies, and the Kichai. The second group centered on the Platte and Republican rivers in the present Nebraska and Kansas, and consisted of the four Pawnee tribes—the Skidai, Chaui, Pitahauerat, and Kitcherahki. Finally there was a northernmost group on the Missouri river, in the present states of North and South Dakota, constituted by the Arikara.

¹ Some additional proof is announced by V. Stefánsson in the *Summary Report of the Geological Survey, Canada, for the calendar year 1912*, pp. 488-489.

² Dall in *Cont. N. A. Eth.*, vol. 1, pp. 93-106.

³ *Bull. 49, B. A. E.*, pt. 1, pp. 971-972.

Traditional and early historical references as well as similarity in language all point to a separation of the last mentioned body from the Skidi Pawnee at a comparatively recent period. Of the Pawnee tribes proper the Skidi were to the north of the others and seem to have considered themselves original inhabitants of the country occupied by them when first discovered. According to Mr James Murie two of the remaining tribes placed their original homes in the east, one as far as the Ohio, while the last claimed to have come from the southwest. The Wichita are merely the largest and most representative of a group of seven or eight allied peoples most of whom have been absorbed by them. When first encountered by whites they were camping along Arkansas river and its branches.¹ Late in the eighteenth or early in the nineteenth century, however, they were pressed out of this country by northern and eastern tribes and moved southwest, first to the North Canadian, later to the Wichita mountains.² There is no tradition pointing to any region outside of this area. The Kichai were formerly on the upper waters of Red river whence they were gradually forced down upon the Trinity. No Kichai migration legend has come to our attention.

The Caddo proper also seem to have partaken of the comparatively immobile character of the tribes of this stock. They were found by the De Soto expedition, in the region later associated with them, and there is no legend pointing to a place of origin or habitation anywhere beyond. Sibley cites a tradition to the effect that the Kadohadatcho, the leading eastern Caddo tribe, had formerly lived at the Cross Timbers, 375 miles above their later seats,³ but this does not indicate any general movement on the part of all of the tribes. An origin myth collected by one of the writers from a Natchitoches Indian takes us back to the neighborhood of Lake Sodo.

¹ *Handbook of Am. Indians*, article Quivira. La Harpe in Margry: *Découvertes*, vol. vi, p. 289.

² Gatschet in *Am. Antiq.*, Sept. 1891, pp. 249-252.

³ *Annals of Cong.*, 9th Cong., 2d sess., 1885.

X.—INDIANS OF SOUTHERN TEXAS

South of the Caddoan peoples were a vast number of Indian tribes now classified into three linguistic stocks called Tonkawan, Karankawan, and Coahuiltecan, but there are reasons for believing that more complete linguistic data (which unfortunately it will be difficult to obtain from any but the first mentioned) would show these to be related. And it is also probable that they would be found to have a connection with the ancient inhabitants of the northern and central parts of the state of Tamaulipas, Mexico. Further than this we have practically no information, no migration traditions having been preserved and little information of any kind regarding them having been recorded.

XI.—THE KIOWA

The Kiowa, constituting the Kiowan linguistic stock, are associated in history with the southern plains, but about 1780 they were in the Black hills and their own traditions as recorded by Mooney carry them back to the head waters of the Missouri in western Montana. Mooney believes that their affiliation is rather with the tribes west of the Rocky mountains than with those on the eastern side, and recent investigations would seem to confirm this view.¹

XII.—INDIANS OF THE ATHAPASCAN STOCK

We now turn to the great western division of stocks referred to at the beginning of this paper.

In point of territory covered, the Athapaskan family equals, if indeed it does not outrank, the Algonquian, which is usually considered the largest of all the stocks in North America. Geographically the Athapascans fall into three separate groups, Northern, Pacific, and Southern. The first, and by far the largest of these, comprises the various tribes sometimes known collectively as Tinné or Déné. In one immense continuous area they spread over the whole of the interior of Alaska, northern British Columbia, and the Mackenzie basin, extending over about 65° of longitude and

¹ Mooney in *17th Ann. Rep. B. A. E.*, pp. 151-155. See J. P. Harrington in *Am. Anth.*, xii, 119-123.

nearly 20° of latitude. Among the more important of their many tribes were the Dog-ribs, Yellow-knives, Chipewyans, the various Kutchin divisions, the Nahané, Carrier, and Chilcotin. A small isolated tribe, the Sarsi, lived with the Algonquian Blackfoot in southeastern Alberta and northern Montana. The Pacific group includes a small isolated band in southern British Columbia, together with others in western Washington, and a series of small tribes stretching in a nearly continuous strip along the Oregon and California coasts between Umpqua and Eel rivers. The southern division, of which the most important members were the Navaho and Apache, occupied a large area in eastern Arizona, western and southern New Mexico, and southwestern Texas extending southward some distance into the Mexican states of Chihuahua and Coahuila. A small isolated group of Athapascan people, the Kiowa Apache, were with the Kiowa in the southern Plains.

The historical problems presented by the Athapascan stock are among the most difficult as well as most interesting in the northern continent, and there is much difference of opinion not only in regard to the movements of the various individual tribes and branches, but also concerning the relations of these branches within the stock. For the northern branch, migration traditions have been recorded chiefly from the tribes of the Mackenzie basin. These were first given by Mackenzie himself¹ and have since been secured by others, notably by Petitot.² Most of these accounts seem to be in accord in placing their earlier home far to the west, either across the sea or on the other side of a long lake full of islands. From this western land they were driven by the cruelty and fierceness of their neighbors, and after long travel and many difficulties came into their historical habitat. Some versions of the tradition make this western home a sort of terrestrial paradise, and it is uncertain how far the accounts are to be taken as purely mythical. Little or no information has been gathered from the Alaskan tribes as yet, and until more abundant material is at hand, it is premature to try to draw conclusions. The most that may be said is that

¹ Mackenzie, *Voyages*, etc., p. cxviii.

² Petitot, *Monographie des Dènè-Dindjîl*.

attempts to derive the northern Athapascans from Asia on the basis of these traditions are absurd. The only really definite indication of migration in this northern group is in the southward movement of the Sarsi, who separated from the main body to the north, and allied themselves with the Blackfoot. A similar origin seems to be indicated for the small tribe formerly living in the Nicola valley in southern British Columbia.

The scattered tribes or bands forming the Pacific group seem to possess no trace of any traditions of migration, and all, without exception so far as is known, locate the creation of their first ancestors within the territory where the bands were living at the time of first European contact. Their general distribution, however, is such as to indicate a movement parallel to the coast and presumably, in conformity with other tribes in this region, from north to south. From the completeness of their adaptation to the environment it would seem that the original immigration into this coastal area must have taken place at an early period.

The two great tribes which together comprise the larger portion of the southern group present an interesting problem. Two contrasted points of view are held. Hodge,¹ relying on the statements of early Spanish writers and explorers as well as native traditions, believes that the Apache moved westward from eastern New Mexico and had not reached Arizona until after the middle of the 16th century. On this theory they would be thus comparatively recent comers in the Southwest, where they have, with the usual readiness of the tribes of Athapaskan stock, adapted themselves rapidly to their new environment, and borrowed many elements of their culture from the sedentary Pueblo tribes with which they came in contact and portions of which they completely absorbed. The Navaho on this theory are believed to have appeared originally about the end of the 15th century in northern New Mexico. At first an insignificant tribe, they grew gradually, in part by absorption of other elements derived from the Río Grande pueblos, the Zuni, the Ute, and the Yuman stock, and in part by incorporation of portions of the affiliated Apache, and in this way extended their

¹ Hodge, *The Early Navaho and Apache*, *Am. Anthr.*, 1893, VIII, pp. 223-240.

territory westward far into Arizona. Goddard¹ on the other hand, relying more on cultural and linguistic considerations, believes that the evidence brought forward by Hodge is inconclusive, and that the Apache and Navaho are on the contrary old residents of the Southwest, having become completely assimilated to the environment in a way impossible if they were recent comers. The migration and origin legends regarded by Hodge as in large part really historical are thus considered to be almost wholly mythical and to have little or no value as indicating tribal movements. The final solution of this problem must await fuller archeological evidence. For the small isolated tribe of the Kiowa Apache—whose affiliations seem clearly with the northern group—we have distinct traditions of their meeting with the Kiowa at the time when these were still in Montana, and of their accompanying them in their southward movements in the Plains.

The larger problem of the movement of the Athapascan stock as a whole has usually been answered by assuming a southerly drift by which portions, breaking away from the parent body in the north, have wandered southward through the Plains as far as New Mexico and Arizona, the Sarsi and Kiowa Apache being laggards or remnants left behind. The Pacific group were thought to be either portions of these who passed west across the Rockies, perhaps down the Columbia, and then from its mouth down the coast as far as California, or else a separate migration from the westerly portion of the northern parent stock passing directly south along the Pacific shores, and of which the Washington and southern British Columbian fragments represented the laggards or latest comers. This view has been opposed by Goddard² who believes that the exact contrary is not improbable, and suggests that a further possibility is that the stock formerly had a continuous distribution but has been disrupted by the intrusion of other peoples. Until, however, more conclusive proof in favor of a northward movement or of a disruption by force is brought forward, the theory of a southerly drift seems best to fit the facts.

¹ Goddard, *XVth Congress of Americanists*, I, pp. 337-359

² *Ibid.*

XIII.—INDIANS OF THE NORTH PACIFIC COAST

We may divide the Indians of the north Pacific coast roughly into two sections, a northern composed of the Chimmesyan, Skittagetan, and Koluschan stocks, and a southern, mainly represented by the Wakashan and part of the Salishan peoples. Among the former the Chimmesyans stand entirely apart, linguistically and to a certain extent culturally. They consist of three tribes, the Tsimshian on Skeena river, the Niska on Nass river, and the Kitksan on the headwaters of both these streams. Although typically a coast people their traditions all point to an inland origin, at least as far back from the coast as the present territory of the Kitksan. The Skittagetan stock, embracing the people more often known as Haida, was located on the Queen Charlotte islands, British Columbia, and the southern end of Prince of Wales island, Alaska. The traditions, both of the Haida themselves and the other Alaskan Indians, show that those Haida now on Prince of Wales island emigrated to that region some time in the early part of the eighteenth century.¹ The traditions of the Queen Charlotte Islands Haida carry us to the eastern shore of the islands, particularly to the northeastern point and to the southern end.² The Koluschan stock, embracing the Indians usually known as Tlingit, extended over all the coast and islands of the panhandle of Alaska, with the exception just indicated, and beyond as far as the mouth of Copper river. The traditions of the greater number of their clans point to an origin on the Nass river to the south, but that of the Kläcke-qoan brings them from among the Athapascan tribes on Copper river, that of the Nanyaayi points to an origin inland from Taku inlet, and that of the Qatcadi to the interior along the upper Skeena.³ On the other hand several Tlingit clans are now represented among the Tahltan of the upper Skeena by later settlement or intermarriage from the coast,⁴ and the Tägish of Chilkat pass are said to be a Tlingit offshoot.⁵ This last statement, however, is probably an

¹ Dawson in *Rep. Geol. Survey Can.*, for 1879, p. 104n. Swanton in *Mem. Am. Mus. Nat. Hist.*, viii, pp. 88-90.

² Swanton, *ibid.*, p. 72 et seq.

³ Swanton in *25th Ann. Rep. B. A. E.*, p. 410; also cf. p. 411.

⁴ Emmons in *Anth. Pub. Univ. of Pa.*, vol. iv, no. 1, pp. 11-21.

⁵ Dawson in *Rep. Geol. Surv. Can.*, 1920, 1887.

error. Within comparatively late historic times the Tlingit have moved farther west toward Copper river, and have modified an Eskimo tribe on Kayak island, the Ugalakmiut, to such an extent that these are now indistinguishable from the Tlingit proper, having adopted their language as well as their customs.¹ The Tlingit and Haida languages furnish still further evidence of an inland origin, the resemblance between at least Tlingit and Athapascan being very marked.

The Wakashans consist of two branches, the Kwakiutl of Queen Charlotte sound and the coast northward to Kitamat, and the Nootka of the west coast of Vancouver and the extreme north-western point of Washington. Many of these tribes are divided into family groups which trace their origin from an ancestor who descended from the sky and settled at such and such a place. As village sites are usually to be found at the places indicated it is probable that they were in fact formerly occupied by the people in question. Nevertheless these sites are all in the same region and do not indicate any movement *en masse* from elsewhere.²

The Salishan tribes may be divided roughly into the coast Salish and the interior Salish. The former were on Georgian straits, the Straits of Fuca, Puget sound, and on the outer coasts of Washington and Oregon—with the exception of the Columbia river entrance, and the northwestern corner of Washington state—as far south as Siletz river. Still farther north, on North and South Bentinck arm, Dean inlet, and Bellacoola river, was a detached body known as the Bellacoola. These seem to have migrated from the coast Salish farther south, but along the heads of the deep inlets instead of by the outer coast. The interior Salish occupied a large part of the lower Frazer valley, including the valley of the Thompson, the upper valley of the Columbia, and as far east as the headwaters of the Missouri. While no memory appears to have been preserved of movements among these people in great bodies, there is reason to believe that the coast Salish originally pressed down from the interior. At least Boas is able

¹ Petroff in *Tenth Century*, vol. viii, p. 146.

² Boas in *Rep. U. S. Nat. Mus.*, for 1895, pp. 328-334.

to say that "both linguistic and archaeological indications suggest that the Salish tribes which now inhabit the coast of the Gulf of Georgia separated from the Salish tribes of the interior at a time when both had the simple form of culture that seems to be characteristic of the whole plateau area and of the Mackenzie basin."¹

The Chimakuan stock consists, or rather consisted, of but two tribes, the Chimakum about Port Townsend, Washington, and the Quileute on the northwestern coast of the same state. It is believed that a closer study of the Chimakuan language may show some connection with Salish.

XIV.—THE KUTENAI

The Kitunahan stock consisted of the Kutenai tribe only. Its historic seat was in southeastern British Columbia along the west flanks of the Rocky mountains, extending also slightly into the present United States. Chamberlain says regarding the origin of these people: "Their traditions suggest that they are comparatively modern intruders into this area from some quarter to the east of the Rockies, possibly around the headwaters of the Saskatchewan."² Their language shows some points of resemblance with those of the Shoshonean group.

XV.—THE SHAHAPTIAN AND THE INDIANS OF WESTERN OREGON

The Shahaptian area included a considerable territory in the vicinity of the Columbia and Snake rivers, in southwestern Idaho, southeastern Washington, and northeastern Oregon. The best known of the several tribes composing the stock was the Nez Percé. Very little information is available in regard to the early history of these tribes, which were first met by Lewis and Clark at the beginning of the last century. The Nez Percé themselves seem to have been long in their historic habitat; on the other hand the Klikitat appear to have begun a movement westward across the Cascades not long before European contact, and to have thus paralleled north of the Columbia the movements of the Molala south of it.

¹ Ann. Arch. Rep. for 1903; App. to the Rep. of the Minister of Education, Ontario, p. 225.

² Chamberlain in Ann. Arch. Rep., op. cit., p. 178.

A number of small, apparently independent linguistic stocks occupied the western portion of Oregon at the time when it first became known to Europeans. These were the Chinookan along both banks of the Columbia from the Dalles to the sea; the Kalapooian in the Willamette valley; the Kusan about Coos bay; the Siuslawian and Yakonan just north of these along the coast; the Takelman isolated among Athapascan peoples on the middle Umpqua; the Waiilatpuan in two separate areas, one along the western slope of the Cascades south of the Columbia, and one southeast of the bend of the Columbia at Wallula; and lastly the Lutuamian, who occupied the southern Cascades, mainly on their eastern slope, and the basins of the Klamath lakes.

For the majority of these, no traditional or other evidence of migration is available. Exceptions are in the case of the Molala who are said by the Cayuse (the eastern branch) to have separated from them, and to have crossed the Cascades toward the west to their historic sites. As the two dialects are quite distinct, this separation must have occurred at an early time. The Klikitat and some other Shahaptian tribes also seem to have been pushing north and west.¹ For the Kalapooians there is some evidence of a southward movement of slight extent, toward Umpqua valley.

XVI.—INDIANS OF CALIFORNIA

The Californian area presents a somewhat troublesome problem. Powell divided the languages of the state into twenty-two separate stocks, with the result that this region appeared to be linguistically one of the most complex in the world. Recent investigations however by Kroeber² and one of the authors and also by Sapir³ make it very probable that the many stocks of Powell may be reduced to nine or ten, of which three (Shoshonean, Athapascan, and possibly Algonquian) are mainly extra-Californian families.

Of the newly determined families, the largest is the Penutian, occupying a continuous area which may be roughly described as

¹ Lewis, *Mem. Am. Anthr. Assn.*, vol. 1, pt. 2, pp. 195-196. Gibbs in *Cont. to N. A. Eth.*, vol. 1, p. 224.

² Dixon and Kroeber, *Amer. Anthr.* (N. S.), xv, pp. 647-655.

³ Sapir, *ditto*, pp. 617-646.

including the whole of the Great Valley together with the coastal region south of San Francisco to beyond Monterey. This includes the former Wintun, Maidu, Miwok, Costanoan, and Yokuts stocks. No definite traditions of migration have been found among any of the members of the Penutian family, but on linguistic grounds there would seem to be some evidence of a former continuity of the Maidu and Yokuts groups, now separated by the intervening Miwok; and in general of a spreading outward from the central portion of the state along the courses of the Sacramento and San Joaquin rivers.

The second large Californian stock is the Hokan, whose territory is much broken up. In the north it comprises the region occupied by the Shastan, Chimarikan, and probably the Karok and Yanan groups as well. Separated from these and farther south are the Pomo, along the coast and in the Coast Ranges north of San Francisco; the now extinct Esselen on the coast south of Monterey; and the Yuman group of the extreme south of the state and in western Arizona. As in the case of the Penutian stock, practically no traditional evidence is available indicating any migratory movements except the slight indications shown by the Yuman branch.

The area occupied by Yuman tribes comprised southwestern Arizona, the extreme southern portion of California, and the northern portion of the peninsula of Lower California. As in the case of most tribes west of the Rockies, there is little traditional evidence of migration. In one or two cases, however, there are some facts which may be significant. Thus the Havasupai now living in Cataract canyon (a tributary of the Colorado just west of the Grand canyon) have traditions of having lived formerly farther to the south, along the Little Colorado and upper Verde rivers. The Yavapai on the other hand, would seem to have moved from a position along the Colorado near the mouth of Bill Williams fork, eastward toward central Arizona. A somewhat similar eastward movement also occurred in the case of the Maricopa who moved during the 19th century from a position near the mouth of the Gila to one near its middle course. Except for the Havasupai, who acquired not a little of the characteristic culture features of

the Pueblo tribes, the general type of Yuman culture is reminiscent of California, and would suggest an earlier home in that direction.

The Shastan group shows some indications of a southerly movement, and general considerations—cultural, linguistic, and geographic—make the supposition of a similar tendency for the whole stock probable. How far the intrusion of the Athapascans has been responsible for this it is as yet impossible to say; the possibility of disruption due to this cause and to the expansion of the Penutian stock must certainly be considered. It seems probable, however, that any such movements, both in this case and in that of the Penutian stock, must have taken place at a very early period.

For the other Californian stocks, there is little evidence at hand. The Yuki, who are in three separate divisions, two north of and one south of the Pomo, show evidence of disruption by the intrusive Athapascans, and of an older separation by which the southern or Wappo group were divided from the parent stock. The Washo in the region about Lake Tahoe on the eastern border of the state show no indications of movement in any direction. For the Salinan and Chumash stocks of the southern coast also there is no traditional or other evidence which would show tribal movements, and it is probable that they have been for a very long period in occupancy of the region in which they were found by the earliest European explorers.

XVII.—INDIANS OF THE SHOSHONEAN STOCK

The Shoshonean tribes stand at present in a somewhat uncertain position as regards their linguistic independence. Since the middle of the last century¹ a feeling has been growing that the Shoshonean languages should be grouped with the Piman and Nahuan to form a larger stock or family, called by Brinton² the Uto-Aztecan. Leaving this question aside for the moment, however, the history of the Shoshonean branch can be briefly summarized.

The area covered by tribes of this group at the time of their

¹ Buschmann, *Spuren der aztekischen Sprache*, Berlin, 1859.

² Brinton, *American Race*, p. 118 sq.

earliest contact with Europeans was, with two exceptions, a continuous one. The mass of the people lived almost wholly within the region generally known as the Great Plateau, and comprised southeastern Oregon, southern Idaho, southwestern Montana, western Wyoming and Colorado, the whole of Utah and Nevada, together with most of California south of the Tehachapi and a narrow strip along its eastern border. The two outlying tribes were the Hopi, whose villages lay in northern Arizona, and the Comanche, who ranged over the southern Plains. On a linguistic basis¹ the Shoshonean tribes may be divided into four very unequal subdivisions: the Pueblo (comprising the Hopi only); the Plateau (the most important tribes being the Ute, Shoshoni, Comanche, and Paiute); the Kern River; and the Southern California (including the Serrano, Gabrieleño, Luiseño, Cahuilla, etc.).

Little has been recorded for any of these tribes, except the Hopi and Comanche, in the way of migration traditions. The Hopi were of complex origin, and will be considered along with the other Pueblo Indians. The Comanche are linguistically closely related to the Shoshoni of Idaho and Wyoming, and there is traditional evidence² of their being residents of that section early in the 18th century, and that they were driven by other tribes from this northern home southward along the western edge of the Plains. At this same period, probably, the Shoshoni were forced west across the Rockies to their historical site. Brinton³ and others have held that this latter movement indicated a former residence of the whole stock in the region between the mountains and the Great Lakes; and Powers⁴ supposed the southern California tribes to be recent intruders there from the eastward. There seems, however, to be little ground for either of these assumptions, and the evidence, both linguistic and cultural, would appear to show that the tribes composing the Shoshonean group have been in occupancy of the Great Plateau and of southern California for a very long time.

¹ Kroeber, *Univ. Cal. Pub. Amer. Arch. and Eth.*, IV, p. 97 et seq.

² Clark, *Indian Sign Language*, p. 118.

³ *Op. cit.*, p. 221.

⁴ Powers, *Tribes of California*, p. 269.

XVIII.—INDIANS OF THE PIMAN STOCK

The Piman family holds still, like the Shoshonean, a somewhat uncertain position in regard to its linguistic independence, and it is probable¹ that with the Shoshonean and Nahuatl it forms merely a branch of the larger Uto-Aztecan stock. The larger part of the territory occupied by this group lies in northwestern Mexico, in the states of Sonora, Chihuahua, Sinaloa, and Durango, with extensions still farther south; of the tribes in the United States the Pima and Papago are the most important, and occupied in the 18th century a considerable area in southern Arizona.

The origin tradition of the Pima² refers to the Salt River valley as the region where the tribe had its beginning, and states that their ancestors moved thence southward to the Gila; much later, under the attack of enemies from the east, a portion moved into Mexico while others went northward to join the Zuñi and Hopi.³ Other traditions refer to an earlier eastern home.⁴ That the Pima had been long settled in the southern portion of Arizona seems indicated by the abundant ruins throughout the area, the majority of which, including the famous Casa Grande, are attributed to their ancestors.⁵ The fact that linguistically the Piman languages stand closer to the Shoshonean than they do to the Nahuatl dialects⁶ and that geographically they are intermediate between these two branches of the Uto-Aztecan family, may perhaps be taken as indicating a general southerly drift for the entire great group. More definite knowledge of the culture and archeology of northwestern Mexico is, however, necessary before any certain conclusions can be reached.

XIX.—THE PUEBLO INDIANS

There is very little information available regarding the migration traditions of the Pueblo Indians outside of the Hopi and the Zuñi. All that we can make out is a widespread belief that the

¹ Kroeber, *op. cit.*, p. 164.

² Russell in *26th Ann. Rep. B. A. E.*, pp. 206-230.

³ Fewkes in *28th Ann. Rep. B. A. E.*, pp. 153-160.

⁴ Russell, *op. cit.*, p. 26.

⁵ Fewkes, *loc. cit.*

⁶ Kroeber, *op. cit.*, p. 163.

people had come up from the underworld at some point in the north. According to Cushing the Zuñi were composed of two elements, an earlier element, the traditional origin of which was identical with that given above, and a later element from the west or southwest.¹ According to Dr Fewkes the Hopi were formed by three prehistoric immigrations, the first of which, consisting of the Honau or Bear people and Kokop or Firewood people, he believes to have come from the Rio Grande region, tradition specifying Jemez. Secondly came the Snake people from the San Juan region in the north, who settled first on the Little Colorado west of Walpi, and finally came to Tusayan. The third and last consisted of what is now the Patki people who came up from the Gila valley, and were perhaps of Pinian origin. They were very likely of the same stock as the southern immigrants into Zuñi. Within historic times, especially since the rebellion of the Pueblos against the Spaniards in 1680, several other movements have taken place. Thus the Asa, a Tewa people, moved to Zuñi and from there again to Hopi, founding the Pueblo of Sichomovi, called "the Zuñi town." About 1710 came the Hano people, also of Tewa stock, and founded the pueblo of that name where the Tewa language is still preserved. Some Keres also came to Hopi, but the bulk of them afterward left and founded Sandia. Over and above these great migrations movements of small bodies of persons frequently occurred, sometimes perhaps of two or three people only, but this served to spread clans from one pueblo to another and to increase the complexity throughout.²

XX.—CONCLUSION

Let us now recapitulate briefly. From the data available it appears that the origin of the tribes of several of our stocks may be referred back to a swarming ground, usually of rather indefinite size but none the less roughly indicated. That for the Muskogean, including probably some of the smaller southern stocks, must be placed in Louisiana, Arkansas, and perhaps the western parts of Mississippi and Tennessee, although a few tribes seem to

¹ Cushing in *13th Ann. Rep. B. A. E.*, p. 342.

² Fewkes in *19th Ann. Rep. B. A. E.*, pp. 573-634.

have come from the region of the Ohio. That for the Iroquoians would be along the Ohio and perhaps farther west, and that of the Siouans on the lower Ohio and the country to the north including part at least of Wisconsin. The dispersion area for the Algonquians was farther north about the Great Lakes and perhaps also the St Lawrence, and that for the Eskimo about Hudson bay or between it and the Mackenzie river. The Caddoan peoples seem to have been on the southern plains from earliest times. On the north Pacific coast we have indications that the flow of population has been from the interior to the coast. This seems certain in the case of the Indians of the Chimmesyan stock and some Tlingit subdivisions. Some Tlingit clans, however, have moved from the neighborhood of the Nass northward. Looking farther south we find evidence that the coast Salish have moved from the inner side of the coast ranges, while a small branch has subsequently passed northward to the west of it. The Athapascan stock in all probability has moved southward, sending one arm down the Pacific coast, and a larger body presumably through the Plains which reached as far as northern Mexico. Most of the stocks of the Great Plateau and of Oregon and California show little evidence of movement, such indications as are present, however, pointing toward the south as a rule. The Pueblo Indians appear to have had a mixed origin, part of them coming from the north, part from the south. In general there is to be noted a striking contrast between the comparatively settled condition of those tribes west of the Rocky mountains, and the numerous movements, particularly in later times, of those to the east.

While we can hope for little more traditional evidence regarding the migrations of our Indians the collection of further ethnological material of all kinds is bound to cast a flood of light upon the whole question of tribal movements. More exact information regarding Indian languages will doubtless bring out new resemblances and contrasts, some of which will in time be shown to have historic value. Again, all of these tribes must be reclassified in accordance with the data yielded by physical anthropology as soon as those data are sufficiently complete. We already know that this classi-

fication will show a very different alignment of tribes, that in some cases linguistic stocks will be cut to pieces and in other cases brought together. This discordance, however, far from disturbing us, should be welcomed as giving a different angle of approach which will probably enrich rather than confuse our conception of aboriginal American history. The study of cultural features properly so considered will also yield certain valuable results, at least of confirmatory value, but less is to be expected from this branch of ethnology than from the two already considered. Culture, however, as well as physical anthropology, has one great advantage over language in that it can be enriched progressively by archeological investigations long after the living peoples are extinct, and there will come a time when the archeological method of approach will be the only method remaining.

AREAS OF AMERICAN CULTURE CHARACTERIZATION TENTATIVELY OUTLINED AS AN AID IN THE STUDY OF THE ANTIQUITIES¹

By W. H. HOLMES

CONTENTS

Introduction	413
The North Atlantic Area	417
The Georgia-Florida Area	420
The Middle and Lower Mississippi Valley Area	424
The Upper Mississippi and Great Lakes Area	428
The Great Plains and Rocky Mountain Area	430
The Arid Region	432
The California Area	435
The Columbia-Fraser Area	438
The Northwest Coast Area	440
The Arctic Shoreland Area	443
The Great Northern Interior Area	445

INTRODUCTION

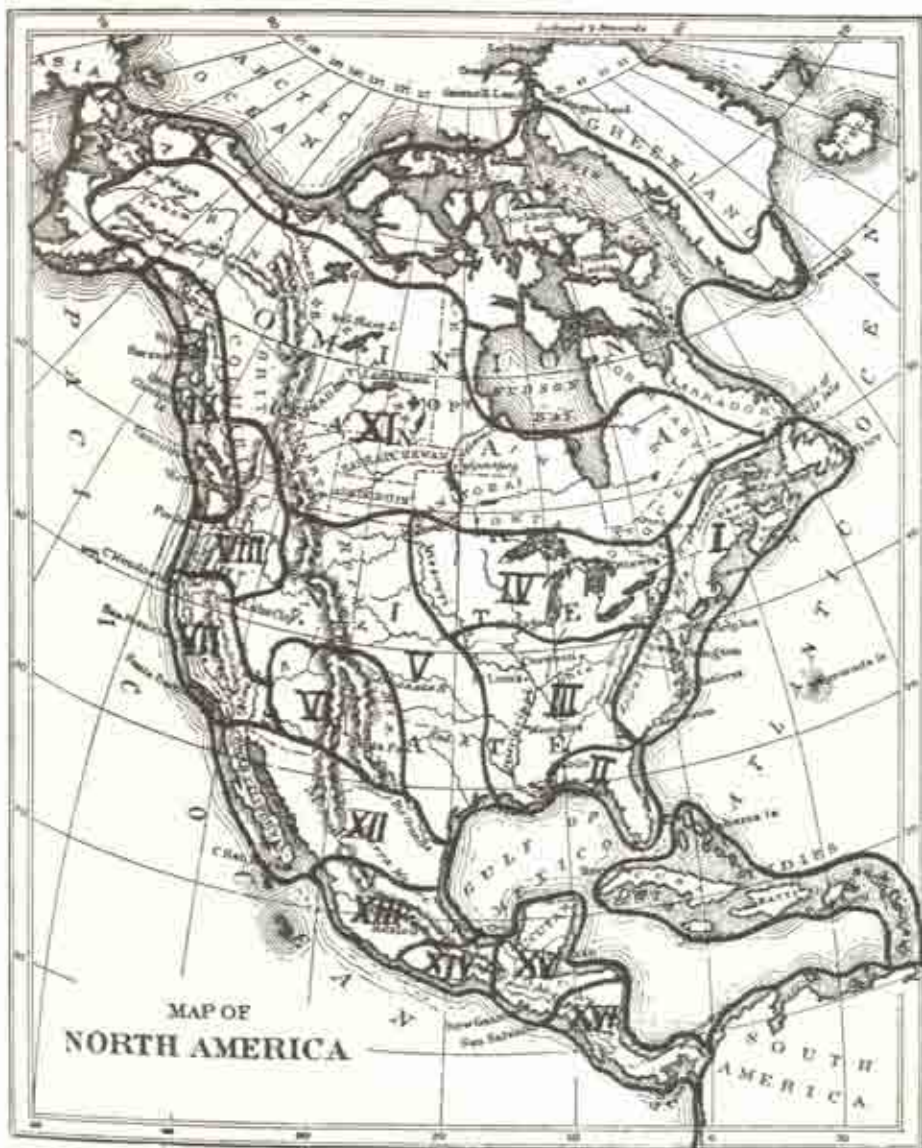
AS an initial step in the description and interpretation of the antiquities of the continent, the archeologist observes the tribes of today, their cultural characteristics and environments, and acquaints himself with what is known of them historically. He finds that their achievements are greatly diversified and that certain forms and states of culture characterize particular geographical areas and realizes that environment has had a large share in determining the course of the culture evolution. He examines the antiquities and finds that analogous geographical distinctions characterize the material culture of the past and reaches the conclusion that the relations of environment to man and culture

¹The present paper is extracted from a work now in course of preparation which is intended to bring together in comprehensive form the antiquities of the continent; it is thus not complete in itself. The several areas are tentatively outlined to facilitate descriptive and comparative studies of the numerous classes of artifacts; and the brief sketches here presented are intended to familiarize the reader and student with the field as a whole and with the relative culture status of its more important subdivisions.

must play an important part in the prosecution of his researches and in the analysis of aboriginal history.

In the practical work of museum classification and arrangement—a work which has served in part to give form to this writing—archeological materials are necessarily grouped primarily by continents and other natural divisions, and secondarily by political divisions, such as states and territories. Separation by the larger natural divisions is always necessary, but separation by ethnic areas, or areas of culture characterization, as they are sometimes called, is most advantageous. These areas may be large or small according to the understanding or the needs of the student. By their means he approximates the real or natural grouping of the material traces of human achievement and studies to advantage culture and culture relationships and the causes of the resemblances and differences everywhere met with. The geographical limitations of culture units are, as a matter of course, not usually well defined. Cultures are bound to overlap and blend along the borders and more especially along lines of ready communication. But notwithstanding this, certain characteristics of achievement or groups of culture traits within each area will be found to separate it from its neighbors and afford effective means of comparison with other culture groups. In the present work, keeping in view the archeological rather than the ethnological evidence, it is convenient to recognize eleven areas north of Mexico (pl. XXXII), namely: (1) The North Atlantic area; (2) The Georgia-Florida area; (3) The Middle and Lower Mississippi Valley Region; (4) The Upper Mississippi and Lakes Region; (5) The Plains and Rocky Mountains; (6) The Arid Region; (7) The California Area; (8) The Columbia-Fraser Area; (9) The Northwest Coast Area; (10) The Arctic Coastal Area; (11) The Great Northern-Central Area. To these may be added (12) The Hawaiian Islands; and (13) The West Indies. These areas are here made as few and simple as possible to avoid too great complexity in conducting comparative studies of the several classes of antiquities.

The Middle and South American areas, also outlined on the broadest possible plan, are as follows: (1) Northern Mexico; (2)



CULTURAL CHARACTERIZATION AREAS OF NORTH AMERICA AS SUGGESTED BY A COMPARATIVE STUDY OF THE ANTIQUITIES

Middle Mexico; (3) Southern Mexico; (4) The Maya Provinces; (5) The Central American or Isthmian Region; (6) The North Andean-Pacific Area; (7) The Middle Andean Pacific or Incan Area; (8) The South Andean-Pacific or Chilean Area; (9) The Amazon Delta Area; (10) Primitive South America, Northern Division; (11) Primitive South America, Southern Division. Detailed study of the antiquities and history of these vast regions might profit even in the initial stages of research work by further subdivision of the areas, but in the present restricted state of our knowledge this would not prove greatly advantageous, as it would prolong the summary review here contemplated without an equivalent in useful results.

These areas in all cases are based on the clearly manifested phases of their culture content. In some areas evidence has been reported of early cultures radically distinct from the type adopted as characteristic of the areas, and ancestral forms grading into the later and into the historic forms are thought to have been recognized. In these particular branches of the research, however, haste must be made slowly as the utmost acumen of the student is called for in making areal and chronological discriminations. It is anticipated, however, since the period of occupancy of the continent must have been of long duration, that not only early but more elementary cultures may in good time be identified.

Within the region north of Mexico the culture of the most advanced communities rises high in the scale of barbarian achievement—a status characterized by an artificial basis of subsistence, sedentary life, successful agriculture, and extensive town building, yet still far below the culture level of glyphic writing reached by the more advanced tribes of Middle America. Pictographic records carved on stone, engraved or painted on bark, and painted on surfaces of many kinds, were almost entirely pictorial or graphic, slight advance having been made in the use of purely conventional characters, save as separate symbols or as ornamental designs. The lowest stage ranges well down in savagery where art in stone in its rudimentary forms had barely obtained a sure foothold, as with the Seri and other Lower Californians.

In Middle and especially in South America the culture contrasts are even greater, and nations standing upon the very threshold of civilization, with arts, industries, and institutions highly developed, are in close juxtaposition with utterly savage tribes to which even clothing and stable dwellings are practically unknown. With the exception of a limited group at the mouth of the Amazon, the more advanced cultures were confined to the west coast and the Andean plateaus, where forests are rare and deserts common, while the primitive status was and is yet found in places throughout the vast forest regions of the eastern slope of the Andes and the Orinoco-Amazon region, in the broad pampas of Brazil, Paraguay, and Argentina, and on the entire Atlantic coastal border from Panama to Tierra del Fuego, excepting always the limited areas about the delta of the Amazon.

These differences in culture status appear to be due to a complex of causes not readily analyzed. Whatsoever the nature of the molding agencies, they have acted to diversify, differentiate, and individualize cultures in a most pronounced manner throughout the two Americas, and the results, as suggested by a study of the several areas, are among the most striking and scientifically important features of our aboriginal ethnology.

The following sketches do not assume to approximate complete presentation of the cultural remains of the several areas; they are merely intended to cultivate familiarity with the vast field as a whole and to lay out its great features tentatively as an aid in describing and comparing the antiquities and the cultures they represent. It is by no means assumed that the culture phenomena of any considerable area are uniform throughout. There may be much diversity, possibly great complexity of conditions. There may be a number of somewhat independent centers of development of nearly equal importance, or a single center may have spread its influence over a wide area. The mapping of the cultures will, in the end, take forms that cannot now be foreseen. When all available relics of antiquity have been considered and their history and distribution recorded, discussion of the culture complex may be taken up to advantage, and, enforced by the somatic evidence and

illuminated by the researches of ethnology, may round out the history of man in America with gratifying fullness.

THE NORTH ATLANTIC AREA.

The north Atlantic characterization area, as outlined for present purposes, extends from Newfoundland and the St. Lawrence valley on the north to Georgia on the south. It includes eastern Canada, New England, New York, Pennsylvania, Maryland, and large portions of Virginia, West Virginia, and the Carolinas. It is a region of splendid forests, rugged highlands, charming valleys, and a diversified coast line indented by many tidewater inlets, and the aborigines, largely of the Algonquian, Iroquoian, and Siouan stocks, were primarily hunters and fishers, although agriculture was practised successfully in many of the fertile valleys. The native culture of both colonial and precolonial times, so far as known, though varying with the widely distributed centers of habitation, was quite uniform in grade and general characteristics. It is well differentiated from that of the south and middle west, but passes with no abrupt change into that of the upper lakes and the great interior region of the north. The changes from north to south were due in large measure to differences in food resources and the influence of neighboring cultures.

The use of stone in building was practically unknown, the dwellings being constructed of bark and mats, and stockades were relied upon for village defense. Burial mounds and other earthworks in the area are rare or insignificant in size, save where the influence of the Mississippi valley culture was felt along the western border, but the shores are lined with shell-heaps often of great extent. Methods of burial were primitive and considerably varied, and the graves yield many examples of the simple artifacts employed by the people. Numerous caves and rock-shelters were occupied for dwelling and burial.

The ceramic art was in a somewhat rudimentary stage, although considerable skill and taste were displayed by the Iroquois in the manufacture of culinary utensils and tobacco pipes of clay. The vessels are round-bodied and often conical beneath, adapted thus

to earthen floors, and were decorated with incised lines forming simple geometric figures, with fabric or cord impressions, and often, among the Iroquois, with crude figures in relief. The tobacco pipes of this people are varied in form and elaborately embellished with modeled life forms. The Virginia clay pipe with long stem and upturned bowl, carried to England by the early colonists along with the first tobacco, gave form to the common clay pipe which prevails even today in the English-speaking world.

Of implements of pecked and polished stone, the grooved ax, celt-hatchet, chisel, pick, gouge-adz, mortar, pestle, slate knife, slate spearhead, and hammerstone are present in large numbers, and articles of faith and ornament include bannerstones, bird-shaped stones, plummets, tubes, pierced gorgets, etc. Chipped implements of all ordinary types are well made and plentiful, as are also shell beads, pins, and pendent ornaments. The engraved conch-shell gorgets of Virginia and the Carolinas are of particular interest, but it is probable that these should be regarded as culture intrusions from the west.

The tribes of this region surpassed their neighbors in the manufacture of a few varieties of artifacts only; their gouge-adz takes first rank among implements of this general class. Within the area there are a number of local features of particular interest, some of which are due to the occurrence of mineral deposits of exceptional character, while others are due to ethnical conditions not at present fully determined. Maine has furnished a group of relics of exceptional character, most noteworthy of which are certain long, slender celts and gouge-adzes, and ground and polished lance-heads, discovered and described by Willoughby and tentatively ascribed by him to some pre-Algonquian people. The occurrence of red oxides with the burials has led to the use of the designation "the Red Paint people." The resemblance of the lance-heads to those of the Eskimo and even to those of northern Europe and Asia is noted. The occurrence in New England and the eastern Lakes region of examples of the ground spearhead and the broad-bladed slate knife, the woman's knife of the Arctic, is also worthy of remark.

Deposits of soapstone occur throughout nearly all the states from Massachusetts to Georgia and were extensively worked by the aborigines for the manufacture of cooking utensils, tobacco pipes, and articles of ornament, and the stone pick-axes and chisels used in cutting out and shaping these articles constitute a unique feature in American archeology. Mica was mined extensively in Virginia and North Carolina, and quarries of argillite, jasper, and rhyolite are found in Pennsylvania, and of quartz and quartzite boulder deposits in the District of Columbia. From the materials obtained in these quarries and from other widely distributed sources of supply vast numbers of chipped implements were made, as would be expected with a forest people devoted to war and the chase. It is stated that a single collector amassed, largely within the limits of a single county in South Carolina, twenty bushels of arrowheads. The coarse grain and refractory nature of most of the materials, however, rendered impossible the refined work which was produced in the areas to the west. Deposits or caches of large chipped blades, mostly of the narrow oblong type, have been found at many points throughout the area. The spear was not in general use on the arrival of the whites, the bow and arrow, the tomahawk (celt-hatchet), and club being the principal weapons. Dugout canoes and canoes of bark were in use, and occasional examples of the former have been uncovered in recent years. Petroglyphs of primitive type are found in all sections. The most noted example is that of Dighton Rock, Massachusetts, which has greatly puzzled antiquaries and has been the subject of much controversy.

Relics of stone and bone, believed to have had their origin in glacial and early post-glacial times, have been collected in the Delaware valley and elsewhere, but geologists are not yet agreed as to the exact age of the formations with which most of the objects are said to be associated. These artifacts are not specifically different from those of the Indian tribes, and whether they represent an earlier and a distinct culture from that of the remains of the region generally seems to be an open question. The possibilities are that, howsoever ancient the older traces may be, they represent continuous occupancy of the area by the same or related tribal groups.

A few remnants of the original tribes, mostly of mixed blood, still live within the more easterly and southerly states, while a considerable body of the Iroquois remains in the valley of the St Lawrence. That the tribes of this great region should have remained always in a state of culture so primitive while other areas witnessed advancement must be attributed in large part to the forest environment. In both physical and intellectual attributes they had few superiors on the continent.

Explorations have been conducted in this area by numerous students, prominent among whom are Kain in New Brunswick; Boyle and Laidlaw in Canada; Willoughby, Putnam, Cushing, McGuire, and Moorehead in Maine; Putnam and Chase in Massachusetts; Perkins in Vermont; Haldeman, Mercer, Holmes, and Wren in Pennsylvania; Beauchamp and Harrington in New York; Rau, Abbott, and Volk in New Jersey; McGuire, Holmes, Fowke, Dinwiddie, Kengla, Reynolds, and Proudfit in the District of Columbia and Virginia; Thomas, Holmes, and Bushnell in the Carolinas.

Early observers embodying in their works important data regarding the aborigines of the region are White of the Roanoke colony, Smith, Strachey, and Hariot of the Virginia colony, Burk, Beverley, Jefferson, Heckewelder, Kalm, Holm, Lawson, Adair, Bartram, and others.

THE GEORGIA-FLORIDA AREA

This area includes the Florida peninsula and part of southern Georgia. The aboriginal occupants, so far as known historically, were mainly of the Muskogean and Timuquan stocks, a remnant of the former only, the Seminole, remaining in the peninsula today; and since the antiquities show no radical diversity of characteristics they may safely be assigned, in large part at least, to the ancestors of these groups. A colony of Cuban Arawak is said to have settled on the west coast of Florida in comparatively recent times, but no very distinctive traces of their presence have been observed. The early literature of the region, summarized by Brinton in *Notes on the Floridian Peninsula*, supplies many interesting details of the vanished peoples.

The antiquities of the area are somewhat distinctly set off from those of the North Atlantic area, but graduate almost imperceptibly into those of the Gulf states to the west and the great Mississippi valley area on the northwest.

Shell-heaps, often of remarkable extent, occur along the Atlantic and Gulf coasts, and on the river banks and lake shores. Some of these remain as originally deposited, while others have been more or less remodeled for purposes of dwelling, observation, or defense. Burial mounds, principally of earth and sand, are very numerous. The houses, built of poles and thatch, arranged often in circular village groups and surrounded by palisades, have left but meager traces. Communal houses mentioned by Cabeza de Vaca were so large that they "could contain more than 300 persons." The researches of Cushing demonstrated the fact that pile dwellings were in use along the Gulf coast, and also that canals and "water courts" were dug to accommodate the canoes of the villagers. Agriculture was practised in favorable localities, as recorded by the early explorers.

Knowledge of the native culture is obtained largely through a study of the contents of the burial mounds and shell-heaps, and more especially through a study of the earthenware, which is very plentiful and presents numerous features of interest. The forms were often pleasing, and in the west life forms were modeled with considerable skill. The figured stamp or paddle was employed in decorating the surfaces in the east and north, while engraved and indented designs are most common in the west. Curvilinear designs and peculiarly conventionalized life forms prevail, and some of these are thought to suggest Middle American influence. The use of color was elementary. Owing to the meagerness of sculptural remains pottery takes the place in large measure of stone art as a means of determining the culture status of the people.

The remarkable finds of Cushing in an ancient village site on Key Marco which, through the accidental inclusion of articles of wood, bone, and shell in deposits of muck in an old canal bed, give us a most instructive and interesting glimpse of the Gulf coast culture of which otherwise we should have remained in almost

total ignorance. The ceremonial masks, figurines, implements, and other carvings in wood, and the conventional and highly symbolic embellishments in color indicate a degree of artistic accomplishment not suggested by the few articles of stone and pottery found in the same connection or, for that matter, elsewhere in the south or west. That artistic development of such pronounced characteristics should be possible, practically without the aid of stone, is a matter of much interest to the student of culture history. It is probable that the culture was exotic in some measure. Implements of shell and sharks' teeth appear to have been the main reliance of the craftsmen of the keys.

Flint occurs in association with the extensive limestone formations of Georgia and northern central Florida, and was utilized by the natives in the manufacture of chipped implements of all the usual varieties; their abundance in Georgia is phenomenal. Varieties of stone usually employed in the manufacture of pecked-ground implements do not occur in the area, and implements of this type are comparatively rare with the exception of the celt which is found in large numbers in mounds and graves and on village sites; the grooved ax is of rare occurrence, a noteworthy circumstance since it is observed that this implement is abundant in the northern portions of most of the Gulf states and in intimate association with the celt. Moore's great collection of relics from the peninsular region includes hundreds of celts but not a single typical or fully specialized grooved ax. It is observed that while the celt is found in great numbers in the adjacent West Indies, the grooved ax does not occur there, the ax of the islands being of a totally distinct type. It is further observed that the celts of the Florida region approximate more closely those of the West Indies than do those of any of the more northerly districts, suggesting intrusion from that direction. An examination of the material of which they are made may serve to throw needed light upon their history.

Mortars and pestles of stone are of rare occurrence. Wood was in common use for these utensils, and examples of mortars and pestles, as well as dishes, stools, masks, and figurines, of this material,

exceedingly well made, were recovered by Cushing from the canal muck at Key Marco.

Numerous ornaments of gold and silver have been found in the peninsula. It is quite possible that some of the more elaborate pieces reached the peninsula from Mexico or Central America subsequent to the Columbian discovery, but that the native metal workers were highly skilled is amply shown by numerous examples of the overlaying of wooden ornaments and objects of bone with sheet copper and by certain plates of sheet copper collected by Moore which display symbolic devices executed repoussé fashion with much precision.

Burial places and mounds yield a rich harvest of relics. A feature peculiar to the peninsula is the inhumation with the dead of great numbers of crudely shaped objects of baked clay, vessels of fanciful shapes, and rude images of creatures and things real and fanciful, manifestly intended for no other purpose than as mortuary offerings. Urn burial, common in Georgia, was rare on the peninsula.

Decided relationships with the culture of Yucatan and the West Indies have been looked for in vain, yet certain analogies more or less pronounced do occur in pottery forms and decoration, in implements of stone and wood, and in the treatment of metals. The relationships are not intimate, but a glance at the general facies of the antiquities leaves the impression of trans-Caribbean kinship, which fades out as we penetrate the interior. A suggestion of cultural connection with South America is found in the frequent occurrence in this and other Gulf states of a perforated hoe-shaped stone implement which corresponds closely with a type of ax prevalent in South America. It is believed to have had only a ceremonial use north of the Gulf.

There has been some discussion of certain supposed evidences of the geological antiquity of man in Florida based on the discovery of human skeletal remains, apparently fossilized, embedded in geological formations in the western part of the state, but it has been shown that the age of these deposits is recent, the appearance of petrification being due to the coating and infiltration of cal-

careous and ferruginous matter present in solution in percolating waters. The most remarkable evidence of age is that furnished by the shell deposits, which are of great depth and horizontal extent and include varieties of shells not now prevalent on the coasts.

The superiority of the culture of this area over that of the North Atlantic region is manifest, especially in skill in the potter's art and in the manipulation of metals. On the whole, considering all branches, the material culture of typical centers differs but slightly in state of advancement from that of corresponding centers in the Mississippi valley. In some respects it is decidedly inferior to that of the more advanced culture centers of the West Indies.

The leading explorers of the antiquities of the Georgia-Florida area are: Brinton, Wyman, Webb, C. C. Jones, Bartram, Cushing, Moore.

THE MIDDLE AND LOWER MISSISSIPPI VALLEY AREA

The very extensive interior region, which comprises the middle and lower portions of the Mississippi valley with much outlying territory, was the seat of a remarkable group of peoples whose culture, all things considered, stands higher than that of any other characterization area north of Middle Mexico. This culture was characterized by well established sedentary life, extensive practice of agricultural pursuits, and construction of permanent works—domiciliary, religious, civic, defensive, and mortuary, of great magnitude and much diversity of form. The people, some if not all of whom were mound builders, were of numerous linguistic stocks, principal among which were the Siouan, Algonquian, Iroquoian, Muskogean, Tunican, Chitimachan, and Caddoan; and these historic peoples, remnants of which are still found within the area, were doubtless preceded by other groups not of a distinct race but probably of the same or related linguistic families. This view, in recent years, has gradually taken the place of the early assumption that the mound culture belonged to a people of high cultural attainments who had been succeeded by the Indian tribes. That mound building continued down to the period of European occupancy is a well established fact, and many of the burial mounds contain as original inclusions articles of European make.

Traces attributed to very early occupants of the area have been reported from time to time, especially the osseous remains of man found in association with remains of the mastodon and mammoth. In nearly every instance, however, subsequent observations have thrown serious doubt upon the authenticity of the original association. A human skeleton, found recently embedded in terrace deposits near Lansing, Kansas, is assigned by some authorities to the Iowan phase of the glacial period, while others regard the inclusion as more recent. Certain relics of stone, attributed to glacial times, have been found in the Ohio and Mississippi valleys, and these await fuller investigation. Numerous crania of primitive type have been collected from ancient sites in the Missouri valley and claims to geological antiquity have been promulgated, but Hrdlička has shown that this type occurs among the modern tribes of the area. The region abounds in caverns, and many of these contain traces of occupancy, but none so far examined seems to include in their floor deposits remains of other than the well-known culture products of the Indian tribes.

Unfortunately for the antiquarian of today the peoples of this area did not construct their buildings of durable materials, and nothing is left to us of their architectural achievements save such works as employed earth and loosely laid stones. These works are now mere unshapely mounds and embankments. The buildings of the Natchez and other tribes of the south have been described by early writers, though imperfectly. The walls were often of wattle-work faced with plaster, and the roofs were of bark and thatch. Little that is specific can be ascertained regarding the character of the buildings which must have crowned such great mounds as those of Cahokia and Etowah, or as were associated with such remarkable works as those of Marietta, Newark, and Fort Ancient. Stockades often supplemented the embankments in defensive works and served to protect the villages from intruders. Modes of burial within the area were extremely varied, and a vast body of the minor works of the people were deposited as offerings with the dead in ordinary cemeteries, in stone graves of several types, and in earth and stone mounds. Shell-heaps, composed mainly of mussel

shells, border the rivers in some sections. They contain relics of art of the varieties prevalent in the respective localities.

The lithic arts were wonderfully diversified and in some respects highly developed. Sculpture of the human figure had, however, made but slight advance, save in connection with the carved tobacco pipes where much skill is shown. The mineral resources, in which the region is extremely rich, were well exploited and extensively utilized. Stone was employed in a limited way in building walls and fortifications and in the construction of graves, and desirable varieties were quarried on a large scale for the manufacture of implements, utensils, and objects of faith, ceremony, and ornament. Heavily bedded chert deposits were worked in Ohio, Arkansas, Kentucky, Georgia, and Missouri; nodular cherts in Indiana, Illinois, Kentucky, and Tennessee; and hematite ore for implements and ochre for paint in Missouri. The ice sheets of the glacial period brought down vast bodies of detritus from the far north, filled with fragments and rounded masses of granitic and other durable rocks which were utilized by the inhabitants of the region. Copper from the Lake Superior mines had taken an important place in the arts and much skill was shown in its manipulation by maleating processes. The tribes of the middle region, the greatest of the mound builders, mined mica in western North Carolina, and the evidences of their operations are of astonishing magnitude.

As a result of the mineral riches of the area, the range of lithic artifacts is greater than in any other region north of the valley of Mexico. By the fracture processes vast numbers of cutting, scraping, boring, piercing, digging, and hammering implements were manufactured. The sword-like blades of Tennessee approach the highest place among American chipped products, and the agricultural implements of the Illinois region constitute a unique and remarkable class without parallel in any country.

The large class of implements and other articles shaped by pecking and grinding processes, often as secondary to chipping, is of great archeological interest. The grooved axes, celts, adzes, and chisels are of superior make, and the discoidal chunkey stones,

tobacco pipes, bannerstones, and other objects of faith and ornament are remarkable for their perfection of form and high degree of finish.

Among the specially noteworthy features of the area are the caches or hoards of stone implements employed as mortuary offerings. Perhaps the most remarkable of these hoards is a deposit of many hundreds of obsidian implements found in an Ohio mound; the beautifully made implements are of unique shapes and were not designed for use, but as offerings merely. They had been transported from unknown sources in the Rocky mountains a thousand miles away, or from California or Mexico. A single deposit in a mound at Hopewell, Ohio, contained upward of 8000 well-made disks of flint of large size. There are also the hematite objects of the central districts; the pigment palettes of Alabama; the engraved shells, and the sculptured utensils and idols of the middle districts; the skilfully executed implements and ornaments of copper; and the remarkable and very puzzling repoussé figures in sheet copper obtained from mounds in Georgia and Illinois. Among the most noteworthy examples of the handiwork of the mound-building peoples are certain relics obtained by Putnam from the Turner group of mounds in Ohio.

Some of the tribes were excellent potters, and the elaborately painted vases and effigy vessels of the middle Mississippi region and the scroll decorated vessels of the lower Mississippi and Gulf coast evince excellent taste and great skill, falling short, however, of the achievements of the ancient tribes of the arid region in some important respects. The stamp decorated ware of the south Appalachian region is of much interest.

It is observed that the culture of this area in certain of its typical phases extends down to the Atlantic in Georgia, blending with that of the Florida area and to the Gulf in Alabama, Mississippi, Louisiana, and Texas. It has much in common with the culture of the upper Mississippi and Great Lakes region, and grades somewhat abruptly into the culture of neighboring areas on the east and west. Although presenting a certain degree of homogeneity throughout, this area is by no means a simple culture unit.

There are a dozen or more somewhat localized centers of development and differentiation, no one of which could in the present state of our knowledge be safely selected as a type for the entire area. Aside from the more typical forms of culture there are limited areas in which very primitive conditions seem to have prevailed down to the coming of the whites. There are some indications of culture relations with Mexico; among these are similarities in the arts as in certain sculptured figures and engraved designs on shell ornaments and pottery, but as a whole the cultures stand well apart.

This area has been the field of extensive though somewhat scattered research. Some of the more important explorations are those of Tomlinson, Squier and Davis, Force, Putnam, Moorehead, Mills, Fowke, Thomas and his assistants, Phillips, Thruston, Moore, Jones, Peet, Whittlesey, MacLean, Holmes, and Metz.

THE UPPER MISSISSIPPI AND GREAT LAKES AREA

The upper Mississippi and Great Lakes region is not very sharply differentiated from the neighboring areas either in its aboriginal inhabitants or its culture, ancient or modern. The historical tribes are of the Algonquian and Siouan stocks, and important communities of the former are still found within the area. The ancient culture is about on a par with that on the east and in some respects is inferior to that on the south. Hunting, fishing, and seed gathering were the leading avocations of the people, but agriculture was practised in favorable localities and the so-called garden beds of Michigan are among the most novel features of our northern archeology. Burial mounds of ordinary forms are widely distributed and monumental features of unique type abound. The latter include groups and chains of earthworks in formal and puzzling arrangements, and numerous animal-shaped mounds, confined largely to Wisconsin, and supposed to have had some important sacerdotal function.

The area has within its borders two features of exceptional interest: the ancient copper mines of the Lake Superior region and the catlinite or red pipestone quarries of southwestern Minnesota. The sites of the copper mines are marked by extensive pittings

made in exposing the copper-bearing rocks and breaking them up to release the masses of native copper. This work was accomplished mainly with heavy boulder hammers obtained from the lake shores and by the aid of fire. Thousands of these hammers are found in and about the old pits, occasional specimens being grooved for hafting. The copper was worked up into implements, ornaments, and objects of faith of great variety which are found, especially associated with burials, throughout the United States. The implements employed in quarrying the pipestone were tough fragments of quartzite rock, roughly shaped for the purpose. The old excavations extend along the narrow outcrop for nearly a mile across the smooth surface of the prairie. The articles made from the catlinite were tobacco pipes, ceremonial objects, and ornaments, and these were distributed and used as was the copper over a large part of the area now known as eastern United States.

The stone utensils of the area comprise rude mortars and pestles, the latter of the cylindrical type, and the pecked and ground implements include grooved axes, celts, adz blades—rarely of gouge shape—tobacco pipes, tubes, and the usual range of ceremonial and talismanic objects. The fluted ax and the faceted celt are peculiar to the area. Deposits of flint were worked in many places and chipped implements of usual types are exceedingly plentiful.

Quartz veins were worked at an early period about the Little Falls of the Mississippi, and crudely chipped artifacts are found in flood-plain deposits of the vicinity which are regarded by some geologists as having been laid down during the closing stages of the glacial period.

The pottery of the area is of distinctive types and generally more primitive in make than the ware of the south. In some sections the pots are carefully finished and decorated with incised and indented figures, but painted specimens are rare.

A most noteworthy feature of the region is the manufacture in recent years of many false antiquities of peculiar type, purporting to represent early occupancy of the country by Old World peoples.

Explorations have been conducted within the area by Cadlin, Latham, Winchell, Brower, Brown, Hamilton, Phillips, Smith, Holmes, and many others.

THE GREAT PLAINS AND ROCKY MOUNTAIN AREA

Traces of the typical culture of the agricultural mound-building peoples of the Mississippi valley fade out gradually as we traverse the great plains which extend westward to the Rocky mountains. The region generally is not well suited to primitive agriculture, and, abounding in game, it encouraged a nomadic rather than a sedentary life, although several stocks—Siouan, Algonquian, Caddoan, Athapascan, Shoshonean, Kiowan, and others—claimed and permanently occupied somewhat definite areas. Agriculture was practised in a limited way in some of the more easterly valleys. There were no buildings that could be called permanent, although many hut rings, house depressions, and small mounds, the last being the remains of earth lodges, occur on the old village sites, and burial mounds are not of infrequent occurrence in some of the principal valleys. The dwellings of the less sedentary tribes were made of the dressed skins of animals, especially the buffalo, which overran the region in vast herds.

Quarries of flint with associated sites of manufacture are found in Oklahoma, Kansas, and Texas, and of quartzite and soapstone in Wyoming. Obsidian is plentiful in the Yellowstone park and in the upper valleys of the Snake river, and was much used locally. The obsidian implements found occasionally in the eastern states may have come from this region. The population was sparse, the activities restricted, and as a consequence the varieties of well specialized artifacts were limited in number. The more essential stone implements of the hunter tribes, the projectile points, knives, scrapers, hammers, and club-heads, are very generally distributed, while other forms are comparatively rare. An implement of much importance to the hunter tribes was the heavy grooved hammer so useful in killing and breaking the bones of large game, in driving stakes, and in pounding seeds and pemmican. It is probably the most typical and characteristic of the stone implements of the plains and mountains of the middle region. A powerful weapon was a hafted hammer, probably of somewhat recent introduction, called *pogamoggan* by some of the tribes. These two hammers were the principal articles of the pecked-ground variety of the

region, although implements of other classes and even objects devoted to sacred and ceremonial use occur here and there in the valleys. Similar lithic conditions prevail in the mountains and valleys north of the arid region, west to the Sierra Nevada and indefinitely toward the north. There are some traces of the spread of the characteristic implements of the arid region, especially the metate and muller, toward the north beyond Salt Lake and to the east over the great plains even as far as the Ozarks, and there is a noticeable overflow of the types of artifacts characterizing the middle Pacific slope into the upper valley of the Missouri. Among these latter objects are straight, tubular stone tobacco pipes and paddle-shaped stone clubs. These intrusions are probably due to the Shahaptian stock, whose habitat extended from Oregon and Washington well over into the valley of the Missouri. Two remarkable discoveries within the region are a deposit of nearly a thousand flint implements obtained from a sulphur spring at Afton, Oklahoma, and a cache of thousands of arrowheads in Delaware county, Oklahoma. Large areas along the eastern border of the plains that were formerly occupied by sedentary, mound-building peoples, had become, through the invasion of the buffalo, the hunting grounds of the so-called wild tribes. Pottery, the safest index of the stable status of a people, is somewhat rare in the area save in the more easterly valleys, and where found it is of the simplest culinary type.

Collections from this great area are comparatively limited, and large tracts of the territory have received almost no attention on the part of archeologists.

Claims to great antiquity in this grand division are based on reported finds of stone implements associated with fossil mammal remains in the loess formations, on a small figurine of baked clay known as the Nampa image found in Idaho, and on an obsidian blade from Nevada. It is a most remarkable fact that the image which is assigned tentatively to the Tertiary or early Quaternary, is probably the most mature example of modeled human figurine yet found west of the Missouri.

Naturally the antiquities on the southwest border affiliate in

numerous features with the art of the Pueblo region and in the Far West with the remains of the California and Columbia-Fraser areas, but the general state of culture has been everywhere about the same and closely akin to that of the historic and the present time in the same area.

The principal scientific explorations of the region are those of Dorsey, Smith, Holmes, Norris, Brower, Winchell, Montgomery, Leidy, McGee.

THE ARID REGION

This area includes New Mexico and Arizona, and portions of Utah, Colorado, Nevada, and Texas. It is in the main a region of plateaus, canyons, and cliffs; of limited fertile areas bordering stream courses, and broad stretches of arid semi-desert. Contrasting thus strongly with neighboring areas, it has induced a culture peculiarly its own. The cliffs abound in caves and deep recesses well adapted for habitation, and the improvement of these for dwelling probably led to the intelligent use of stone in building, with the result that the building arts were more highly developed than in any other section north of middle Mexico.

That the region has been occupied for a long period is amply attested by the occurrence of great numbers of ruins of substantial structures, cliff-dwellings, and plateau and lowland pueblos scattered broadcast over the territory. Reservoirs and extensive traces of irrigating canals attest the enterprise of the people. That the present town-building tribes are the descendants of the ancient peoples is indicated by tradition, by skeletal evidence, and by material culture. The past connects with the present without perceptible break, and the implements and utensils of today are, save for the intrusive elements of white civilization, the implements and utensils of the past. The town-building peoples belong to a number of linguistic stocks,—Shoshonean, Zuñian, Tanoan, Keresan, Piman, and Yuman,—and aside from these a number of non-townbuilding tribes occupy the region,—the Ute, Paiute, Navaho, and Apache,—the range of whose lithic arts is quite limited, agreeing somewhat closely with that of the hunter tribes of the plains and mountains.

Four types of dwellings are noted: concrete, as in the Casa Grande ruins in Arizona; adobe bricks, as in parts of New Mexico and Arizona; masonry, throughout the region; and excavated, as in Colorado, New Mexico, and Arizona. The cliff-dwellings are of great interest and are single houses, small groups, and, in cases, villages capable of accommodating hundreds of people. Generally they occupy picturesque and almost inaccessible niches in the canyon walls. The plateau and cliff sites were often selected with a view to defense, and the lowland pueblos were practically fortifications. The outer walls were unbroken save by a single doorway, while entrance to the dwellings generally was from the inner court by way of the roofs of the first story. In many places steep ascents and narrow passes were defended by low walls of rude masonry, and it is assumed that the round and square towers found in some sections were designed for observation and defense.

Aside from the buildings and excavated dwellings, other features of the lithic art of the region, although distinctive, are in no case markedly superior to corresponding features of neighboring areas. Nearly all implement types are in present use or have been in recent use by the tribes, and the practice of gathering and using stone implements from the ancient sites has been so general that the old and the new are not separable, and references of implements or other relics of art to particular tribes, ruin groups, or districts must be made with caution. The mealing stones, especially the metate and the muller, though plain slabs or shallow troughs, are well made, and the numerous small mortars and pigment plates are sometimes carved to represent serpents, birds, and other animal forms. The carving of animal fetishes is a noteworthy feature, particularly of the modern art, but the work is not of a high order of merit. Attempts at representing the human form are exceedingly crude. The most ambitious sculptural effort of the region is exemplified in the figures of two crouching mountain lions worked out life-size in the rock in place near Cochiti in the Rio Grande valley, but these figures have been so mutilated that it is difficult to determine their original merit as works of sculpture.

Receptacles of stone, aside from the mealing stones and mortars,

are rare, their place having been taken by products of the potter's art, which are abundant and of superior quality, and remarkable for varied and tasteful decoration. The potter's art had reached a degree of perfection not greatly surpassed elsewhere in America, certain groups of the ware displaying grace of form and beauty of decoration advanced apparently far beyond the attainments of the people in other directions.

The minor stone implements of the area correspond in grade somewhat closely with those of the middle and eastern states and the Pacific slope, but the gouge, celt, chisel, and perhaps other forms are absent; while a few are peculiar to the area, as the spatulate celt and the sandal last. The grooved ax takes the most prominent place, and in form, finish, and effectiveness as a stone-age cutting tool is rarely surpassed. Numerous axes of exceptional interest are quite distinct in type from the ordinary ax and are made of fibrolite, a handsome mineral of great toughness and hardness which is rarely found elsewhere. Implements for straightening and smoothing arrow-shafts are quite numerous and exceptionally varied in shape. A group of spatulate implements of jasper, resembling somewhat closely the celt of the East, is of special interest. Although it is referred to by the natives as an agricultural implement, its modern use, according to Fewkes, is entirely ceremonial. In one instance this explorer found twelve of these implements among the sacred paraphernalia of a Hopi altar. The present writer found one embedded in a bin of charred corn in a cliff-house on the Rio Mancos. Hammerstones of all ordinary varieties are present in large numbers, and abrading stones and polishing implements are of common types. Chipped implements—arrowpoints, spearheads, knives, scrapers, and drill-points—are of usual types and are not very abundant or especially noteworthy. The materials used include obsidian, jasper, and many varieties of chalcedony. Great skill was evinced in the manufacture of beads and other small trinkets, the boring being done with the pump drill. Bone was much used for awls, and shell for ornaments. The bow and arrow was the principal weapon, while the atlatl, or throw-stick, was in pretty general use.

Mines of turquoise were worked extensively in New Mexico, Nevada, and Arizona. This semi-precious stone was used for ornaments and especially for inlay or mosaic work, some very attractive specimens of the latter having been collected, and it was distributed by trade to distant parts, even to Mexico. There are few traces of the working of metals, the silversmith's art of recent times having been introduced by the Spanish, and the copper bells occasionally found are probably of Mexican origin. The weaving arts and basketry were practised with much skill.

In three important branches of material culture—the ceramic, the textile, and the stone-building arts—this area stands far above any other north of middle Mexico. Little evidence of great antiquity beyond that furnished by the complex cultural conditions and innumerable deserted dwelling places and acequias has been found.

Among those who have contributed observations of scientific value regarding the antiquities are: Blake, Cope, Powell, Cushing, Fewkes, Bandelier, Matthews, Hewett, Russell, Hodge, Holmes, Hough, Jackson, the Mindeleffs, Nordenskiöld, Stephen, Pepper, the Stevensons, Wheeler, Whipple, Simpson, Morgan, Dorsey, Bartlett, Voth, Bourke, Prudden, Kidder, N. C. Nelson.

THE CALIFORNIA AREA

Notwithstanding the diversified physical characters of the state and the extraordinary assemblage of linguistic groups within its limits, the culture of California was and is uniformly primitive. At the same time it is set off with remarkable distinctness from the equally primitive cultures of other areas, especially those of the Atlantic side of the continent. In the desert and semi-desert regions of the extreme south and in northwestern Mexico, occupied mainly by the Yuman stock, an exceptionally primitive state of culture prevailed, as graphically depicted by Father Baegert in his report dated 1772, and by McGee in the *17th Annual Report of the Bureau of American Ethnology*. It is observed that the Santa Barbara region, including the islands off the coast, was in early times the center of a somewhat exceptional

development in certain branches of handicraft and especially in the working of stone, while more primitive but kindred conditions prevailed to the north and east throughout California.

The lithic antiquities of the Santa Barbara district, which are attributed in large part to the Chumashan group, are characterized by great numbers of well sculptured domestic utensils—bowl-shaped mortars, and long, graceful pestles of sandstone, globular cooking pots, rectangular and ovoid baking or boiling plates, tubular tobacco pipes of steatite, and polished bowls and cups of serpentine. The quarries from which the materials were obtained are situated partly on the mainland, but principally, it is believed, on the islands off the coast. The shell-heaps and village sites of the mainland and of the islands have been examined by Schumacher, Bowers, Nelson, and members of the War Department surveys, and the quarries of Santa Catalina island have been described by Schumacher and the present writer. Contrasting with the thin-walled bowl-like mortars of this district and the slender, graceful pestles associated with them, are the heavy, globular, conical and cylindrical mortars, the numerous mortars and clusters of mortars worked in outcropping rock masses with their heavy cylindric pestles, and the metate slabs with their flattish mullers which occur in great numbers in many sections.

Bone was much used for piercing implements and ornaments. The beautiful shells of the coast—especially the *haliotis* and large clam—were a favorite material for the manufacture of personal ornaments, and the dentalium and other of the smaller shells served as ornaments and as a medium of exchange.

In the middle and northern districts obsidian is plentiful, and chipped implements made of this material are found in great numbers. The large knives, some of which measure two feet or more in length, are marvels of the flaking art, and are second in this respect in North America only to the slender flint blades of Tennessee. There are also superb flint blades in some localities, and arrow-points and spearheads of exceptional beauty are found, their manufacture having continued in some sections down to the present day. Other features deserving special mention are the perforated digging

weights made of numerous varieties of stone, the hook-shaped carvings and the killer whale images of soapstone of the Santa Barbara region, and the plummet stones of middle California. Among the unique objects are specimens of boat-shaped and banner stones (imperforate) of eastern type also found in middle California. It is a remarkable fact that the grooved ax, the celt, and the gouge, implements of so much importance in eastern areas, do not occur, or are found but rarely, on the Pacific slope; the small adz blades take, in a measure, the place of these tools.

The dwellings were of grass, brush, bark, and earth, and in the north were to a limited extent of slabs of wood. The floors were sometimes excavated to slight depths, and the more primitive structures were often covered with earth. Absence of stone building in the area and the practical absence of pottery are in striking contrast with the well matured state of these arts in the arid region on the east, shortcomings which, notwithstanding the well-made utensils of stone and the exquisite basketry and shell and bone work of California, place the Pueblo culture on a considerably higher plane than that even of the most advanced group of the Pacific states. The practice of agriculture gave the Pueblo people a decided advantage over the non-agricultural peoples of the coast, whose chief food resource, aside from the products of the chase, consisted of acorns, seeds, and berries.

The handiwork of the tribes of the coast merges with that of the inland valleys and ranges, and this blends in turn with the culture of the Sierra, and the basin range region to the east. The transition between the culture of southern California and that of the Pueblo region is decidedly abrupt, although the somewhat recent coastwise extension of the Shoshonean stock from the east has resulted in limited blending. The transition to the north is gradual, the disappearance of the oak being responsible for marked changes in the activities and manner of life of the people.

A most extraordinary feature of California archeology is the occurrence of articles of stone—mortars, pestles, and other objects of kindred culture grade, as well as fossil human remains—in the gold-bearing gravels of the mountain valleys, numerous specimens

having been reported as coming from beneath beds of lava of early Quaternary or late Tertiary age. That the relics are old in cases can not be doubted, but their exact chronological place and value have not as yet been ascertained.

The most noteworthy features of Californian culture are entirely its own and are manifestly due in great measure to the molding influences of the environment. The acorn is probably responsible for the wonderful development of the mortar and pestle, and deposits of soapstone have made possible the unique cooking pots and other noteworthy features of the native handicraft. The art of basketry was remarkably developed and retains its superiority to the present day. Watertight baskets and utensils of stone took the place of earthenware.

It is interesting to note that, beginning in middle California, the status of culture as represented by art works rises gradually as we pass to the north through Oregon, Washington, and British Columbia, the culmination being reached with the tribes of the Northwest coast. In the south attempts to model or carve the human figure are unknown, while animal figures are of rare occurrence. As we advance toward the north, sculptures, human and animal, increase in number, and in British Columbia there is an extraordinary development of the sculptor's art culminating in the remarkable grave posts, masks, and giant totem poles. That Middle America has had no influence on the culture of this coast is apparent.

Considering all phases of their culture, the achievements of the California tribes must be regarded as inferior to those of the Gulf states, the Mississippi valley, the Puéblo region, and the Northwest coast, and even of the Eskimo of Alaska.

Among those who have conducted archeological investigations in California are: Whitney, Schumacher, Yarrow, Henshaw, Powers, Bowers, Holmes, Sinclair, Meredith, Terry, Yates, Palmer, Becker, Nelson, Rust, J. C. Merriam, and Skertchley.

THE COLUMBIA-FRASER AREA

The interesting region beginning in northern California and extending north to include the Columbia and Fraser valleys, pre-

sents diversified yet in a large way uniform culture phenomena. Owing to the somewhat marked differences between the coastal environment which is moist, and rich in forests, and the interior which assumes generally a semi-arid aspect, the material culture, ancient and modern, presents numerous minor differences. Naturally the inland culture graduates into that of the plateau and mountain region on the east. It is not separated very definitely from California on the south, but presents strong contrasts with the culture of the Northwest coast.

The inhabitants of recent times comprise numerous stocks and tribes of primitive culture whose chief dependence was and is hunting and fishing and the natural supply of seeds, nuts, fruits, and roots. In the south the acorn was a principal article of diet. Their better houses were of wood and earth, and have left few traces save the shallow floor excavations with accompanying heaps and ridges of earth, and in the arid interior the earth-rings which mark lodge sites. Along the shores are numerous shell-heaps, the industrial contents of which agree with those of the general region save in so far as differences have resulted from differences in environment. Eells mentions burial mounds in the Willamette valley which yielded a wide range of the ordinary local relics, besides, in cases, glass beads and articles of iron. Chase examined certain mounds on the coast in southwestern Oregon with similar results. Earth-works and simple fortifications are mentioned by both explorers. Numerous cemeteries have yielded many relics of art of all classes. Rock carvings are generally distributed over the area.

The relics of stone seem to tell a consistent story of ethnic conditions varying but little from that of historic times. Certain forms of implements and objects of sculpture characteristic of California extend to the north throughout the entire length of the area, while other forms characteristic of the Northwest coast extend far to the south. Deep globular forms of mortars prevail in some sections, and metates are found in others. The pestles in certain regions are of the oblong-club shape, often well finished and even tastefully carved, while in others they are ovoid or flattish, often merely adapted boulders. All were used as hammers on occasion.

Tobacco pipes, straight in the south and bent tubes and other forms in the north, are mentioned. The grooved ax and celt are absent, the adz blade taking the place of these forms here as elsewhere on the Pacific slope. Dishes, slate knives, sinkers, wedges of antler, abrading stones, scrapers, drills, arrow-shaft rubbers, and clubs (the latter of bone and stone), and projectile points and knives are found in numbers.

Among objects of exceptional types may be mentioned large obsidian ceremonial blades in the south, batons of stone or bone carved to suggest or represent animal shapes, weight-like stones with loop for suspension, and some curious carved heads which have been regarded by some as intended to represent apes. The latter, although not carvings of particular note, find no counterpart in any portion of North America.

Detailed study of this region would, perhaps, as in other cases, require its separation into two or more minor environments, but the blendings of the material culture are so intricate that conclusions of value can not be reached until further field investigations are made.

There appears no certain evidence of the presence in early times of peoples distinct in character and culture from those of the present. The valley of the Columbia is given an important place in the ethnic history of the continent by Morgan who imagined it was a kind of hot-house, the multiplying peoples of which spread out over the south and east; but slight evidence has been found to support this hypothesis. Certain finds of supposed geologically ancient human remains and culture traces have been reported, but none of these have so far been fully authenticated. If, however, geologically ancient man did occupy the continent, the valley of the Columbia ought to be a very promising field for the preservation and discovery of the record.

Explorers of the region include Schumacher, Eells, Smith, Boas, Terry, Dawson, Morice, and Chase.

THE NORTHWEST COAST AREA

This area comprises a rather narrow strip of the mainland and the contiguous coastwise islands in British Columbia and Alaska,

and extends from Puget sound on the south to Mt Saint Elias on the north, a distance of twelve or thirteen hundred miles. The present tribes belong to half a dozen stocks, well differentiated in physical characteristics from the Eskimo, with whom they come in contact on the north, and differing somewhat decidedly from the Indian tribes on the east and south. The material culture embodies many noteworthy and exceptional features and, as a whole, stands well apart from all other areas of the continent. It affiliates in some respects with that of the coast culture on the south and with the inland culture on the east. Hunting and especially fishing are and have always been the chief food resources of the people, agriculture being unknown. The area abounds in splendid forests, and the people have developed exceptional skill in carving wood, originally with stone tools, and later in greater elaboration with implements of iron and steel. The dugout canoes are often of great size, beauty, and seaworthiness, and are probably the world's highest achievement in this direction. Not less worthy of mention are the substantial houses of hewn timbers, and the totem poles, house posts, grave posts, human and animal effigies, and various utensils, masks, and other objects carved with a skill and boldness that would do credit to any people. Although it must be allowed that these results are due in a measure to the acquirement of white men's tools, it can not be denied that the people are endowed with a genius for sculpture without parallel among the tribes of northern America. Their skill in carving extended to stone, shell, bone, and horn, and to a wide range of minor articles of use, ornament, faith, and ceremony. The artifacts of stone include hammers and mauls of the highest known types, adzes, mortars, pestles, knives, batons, tobacco pipes, amulets, ornaments, and other objects, but examples of chipped stone are of rare occurrence. Pottery is unknown, vessels of wood, bone, and horn serving in its place. Slate obtained from deposits on the Queen Charlotte islands has been much used in recent times for carving, and remarkable results are seen in miniature totem poles, boxes, dishes, pipes, and in diversified animal, human, and fanciful forms. Jade, found in the Frazer valley and probably elsewhere, was skilfully cut by primitive

abrading processes and shaped into tasteful implements and ornaments. Much taste is shown in the inlaying of ornaments of bone and stone with the brilliant nacre of shells. Petroglyphs are numerous in some sections and probably date back to very early times, although they display the peculiar characteristics of the graphic art of the living tribes as embodied in painting, engraving, and weaving. Copper was and still is worked with considerable skill, and although the native metal occurs within the area, it is not known to what extent it was mined and utilized before the coming of the whites. Certain features of the arts—practical, religious, and ornamental—are thought to suggest inspiration from the Pacific islands, but if this is shown to be the case we shall still be unable to say whether that influence may not have been exerted exclusively during the rather long period since modern sea-going vessels began to ply back and forth on the Pacific. Traces of advanced Asiatic art are occasionally encountered along the coast, but these may be attributed to the stranding of vessels carried across the Pacific by the Japan current rather than to purposeful voyages in prehistoric times.

The peculiar geography of the country has doubtless served in conjunction with its exceptional vegetal and animal resources to develop the unusual ability and enterprise of the people. Indeed, if a greatly diversified coast line tends, as some have held, to accelerate the culture progress of peoples, the inhabitants of this region should rank high among American nations.

The archeologist can lay little exclusive claim to the antiquities of the region, since nearly all the known forms of native artifacts appear to have been in use since the coming of the whites, and these have given way only gradually to the encroachments of iron and steel. Scientific researches within the area have hardly touched the problems of antiquity, and no evidence serving to carry the history of man into the remote past has been obtained. The culture, so far as observed, appears to be decidedly homogeneous and with slight trace of antecedent forms of art either lower or higher than the historic. It is believed by some authorities that certain elements of the population entered the area from the high-

land valleys on the east. Although this region lies along the most likely trail of peoples entering America by way of Bering strait, nothing has been observed in the culture of the people suggesting migrations from the north, and no characteristic features that might not have arisen within the local environment or from possible intrusions within a few hundred years.

Original investigators of this area who have contributed information regarding the native culture and antiquities are Swan, Niblack, Boas, Emmons, Smith, Swanton, and others.

THE ARCTIC SHORELAND AREA

The arctic characterization area extends from Greenland on the east to farthest Alaska on the west, and from the tortuous northern shores of the continent somewhat indefinitely into the interior. Along the Atlantic and Pacific coasts the peculiar arctic culture shades off into the cultures of the south. Where not subject to the direct influence of other races, it is essentially Eskimoan in its prehistoric as well as in its historic phases, and the uniformity of the frigid environment and of the racial elements involved has resulted in marked uniformity of achievement throughout the area. Indeed, so all-impelling are boreal conditions that it would seem strange, since Bering strait does not interfere with free intercourse between the east and the west, did this uniformity not extend practically the entire length of the Arctic circle. The culture of the past merges into that of the present and archeological researches may be expected in time to contribute much of interest to the culture history of the area, at least of the more recent past. There is no doubt that marked changes have taken place in the arts and manner of life of such of the peoples as have come in close contact with the whites, but we may feel assured that their ingenuity and their exceptional dexterity in many directions are indigenous traits, developed largely as a result of long struggles with the exacting environment.

In these inhospitable regions shelter during the inclement seasons is an ever-existing necessity, but home-building had its severe limitations. Houses were built of driftwood, whale bones, stone,

earth, sod, and snow, and the sunken floors aided in making existence during the long winters bearable. Explorers find traces of these long-deserted structures and of storehouses and cairns scattered along thousands of miles of the frozen coast.

Fire for warmth and for cooking is a first consideration to dwellers in the arctic, and since oils and fats were the main dependence for fuel, the lamp filled an important place in every household. This useful utensil was made usually of soapstone. It is a remarkable fact that the lamp is unknown in any other part of America, while several forms are found in arctic Asia.

Hunting and fishing are and were always necessarily the almost exclusive means of subsistence of the people, and weapons and other devices for capturing game are among the most ingenious of their kind. In the west tough jades, the rare pectolites, and other hard varieties of stone were employed in making mortars, pestles, dishes, vessels for containing, hammers, adzes, chisels, picks, knives, whetstones, sinkers, tobacco pipes, and other implements and utensils. Hard, brittle stones, such as flint and slate, were wrought and skilfully shaped by fracture processes into knives, scrapers, drills, and projectile points, and the art is by no means a lost one at the present day. It is a noteworthy fact that, although great skill was shown in the shaping of stone by these processes, spear and harpoon heads, knives, and especially the woman's knife, were very often shaped and sharpened by grinding. Familiarity with this process in the shaping of bone and ivory would necessarily suggest its use in working stone. The grooved ax, celt, and gouge are absent from the area.

Stone was used also in the manufacture of personal ornaments, such as labrets, beads, ear-plugs, and pendants, some of these being unsurpassed for beauty of material and finish. Figurines, toys, fetishes, charms, talismans, and a multitude of other articles were also carved with great skill and in all available materials, and engraving of pictorial subjects of considerable merit is a distinctive feature of the more recent arctic art.

It is a remarkable fact that pottery was formerly in common use in the far north, especially along the coast as far east as Franklin

bay. The vessels, rather thick-walled, and generally of medium or large size, were probably intended for cooking and containing food, but are of good shape and tastefully ornamented with incised and impressed decorations. The pottery-making period is not yet determined, but the art appears not to have been practised in recent times, save in the manufacture of lamps.

As with many of the ethnic areas of America, the material culture of the present and past blend completely. The task of determining by a study of the antiquities the changes that have been wrought falls to archeology. The shell-heaps of the Aleutian islands have yielded data of interest regarding the problems of chronology, carrying the story back perhaps thousands of years. The Bering region is believed to be pregnant with historic interest—geological, geographical, climatic, and anthropological—to hold within its soil and more recent formations solutions of many of the problems of the American race—but the inquirer must wait.

A comparison of the culture of the Eskimo race with that of the other ethnic groups of the continent must result in giving this people an enviable place in the scale of intellectual achievements, but the environment has placed rigid limitations on the possibilities of accomplishment. However, the list of minor artifacts would probably be as long as that of any other northern American area, and many of the things are without corresponding features elsewhere.

Among the explorers who have contributed original information regarding Eskimo culture may be mentioned Dall, Murdoch, Nelson, Turner, Boas, Solberg, Rink, Mackenzie, Holm, Frobisher, Simpson, Krantz, Kane, Hoffman, Grenfell, and Stefánsson.

THE GREAT NORTHERN INTERIOR AREA

Archeologically the great interior region of British America is practically a negligible quantity. It may contain traces of early occupancy of deep interest to the historian of the race, but research has as yet made slight progress within its borders. It is assumed as probable that successive instalments of migrating peoples entered the gateway at the northwest and moved southward and eastward over the region, some remaining, unaware of better things,

others passing on to more genial climes. None appear, however, to have made a perceptible impression upon the face of the northern wilderness. Over a large part of the area, at least, all traces of very early occupancy, if such there ever were, must have been wiped out by the ice sheets which, one after another, swept southward over the country, the latest invasion in the central region continuing down to the period which witnessed the building of the Egyptian pyramids. Limited areas in the west and northwest were not thus invaded, but these have, as yet, yielded nothing of particular value to archeology. The extensive operations of the gold miners of the Yukon have, during twenty years of unprecedented activity, brought to light no trace of man or his works.

That the primitive Athapascan and Algonquian stocks—the caribou hunting peoples—have long occupied the region and have left the simple products of their handicraft on countless abandoned sites is safely to be inferred, but it is probable that past cultures did not in any instance rise above the level of the present. The researches of Mackenzie, Hearne, Morice, and others indicate the poverty of the historical tribes in manifestations of material culture, and the archeologist may expect to find little beyond artifacts of the simplest type—projectile points, knives, scrapers, abrading stones, hammerstones, boiling stones, and minor relics of other materials—merely such things as are necessary to the existence of hunter tribes. Traces of intrusive culture may be expected along the western and southern borders. The unfolding of the story of the past in this area must prove a tedious and almost thankless task. At any rate, it is apparent that in the present state of our researches this region will seldom be referred to in the discussion of the antiquities and culture history of the continent.

Explorers of this area who have made contributions to the history of early times include Mackenzie, Hearne, Morice, Hill-Tout, Dawson, and others.

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MATERIAL CULTURES OF THE NORTH AMERICAN INDIANS

By CLARK WISSLER

CONTENTS

DISTRIBUTION OF MATERIAL TRAITS.....	449
CULTURE AREAS.....	449
Plateau Area.....	451
California Area.....	453
North Pacific Coast Area.....	454
Eskimo Area.....	455
Mackenzie Area.....	457
Eastern Woodland Area.....	459
Southeastern Area.....	462
Southwestern Area.....	463
WIDELY DISTRIBUTED TRAITS.....	465
CULTURE CENTERS AND THEIR PROBLEMS.....	466
TRAIT ASSOCIATION.....	487
DIFFUSION OF MATERIAL TRAITS.....	489
MOTOR FACTORS.....	494
SUMMARY.....	501
BIBLIOGRAPHY.....	503

FOR some years the study of material culture has been quite out of fashion, though not so very long ago it was otherwise. Field-workers still record such random data as come to hand and gather up museum specimens, but give their serious and systematic attention to language, art, ceremonies, and social organization. As a result we have accumulated certain stimulating and serviceable conceptions which serve as a basis for the further development of these problems. On the other hand, there is little of this character to record for material culture, so that if we give our attention strictly to a review of progress, the task will be light. In consequence, we have chosen to review briefly the data for North American material culture and then present some of the most obvious general problems that are suggested.

The description of a tribe's material culture, to be regarded as adequate, should give reasonably full data on the points enumer-

ated in our topical list. Such a list might well serve as a guide to field-work and also as an outline for the published reports. In the preparation of this outline we have been guided entirely by practical considerations rather than by logical relations. Thus the order of topics and their divisions have no scientific significance, but are such as justify themselves to us as the most convenient.

The thorough treatment of our subject would require taking up in succession the three hundred or more tribes known to us and reviewing their culture in detail. Unfortunately, we have very meager data on many points, but on the whole this outline can be more completely filled in for all these tribes than similar ones for their social and ceremonial cultures. For some tribes we have special papers treating most phases of their material cultures, but the bulk of our information is scattered here and there among books of travel and exploration. Most of these data are still awaiting the ethnological student, yet we have now available in the readily accessible literature an *extensive* knowledge of the continent that is sufficient for a brief general discussion of our subject.

TOPICAL LIST OF DATA NEEDED TO CHARACTERIZE THE MATERIAL CULTURE OF AN AMERICAN TRIBE

1. Food: *a*, methods of gathering and producing vegetable foods; *b*, hunting; *c*, fishing; *d*, agriculture and domestication; *e*, methods of cooking; *f*, manufactured foods. (Details of methods and appliances in every case.)
2. Shelter: details of structure for (*a*) seasonal types; (*b*) permanent types, and (*c*) temporary shelters.
3. Transportation: methods and appliances for land and water.
4. Dress: materials and patterns; sex differences, *a*, headgear and hair dress; *b*, foot gear; *c*, hand gear; *d*, body costume; *e*, over-costume.
5. Pottery: methods of manufacture, forms, uses, colors, technique of decoration.
6. Basketry, mats, and bags: materials, kinds of weave, forms, uses, technique of color and decoration.
7. Weaving of twisted elements: materials, methods of twisting thread and cord, weaving frames or looms, technique of dyeing and pattern-weaving, kinds and uses of products.
8. Work in skins: *a*, dressing, methods and tools; *b*, tailoring and sewing; *c*, technique of bags and other objects; *d*, use of rawhide.
9. Weapons: bows, lances, clubs, knives, shields, armor, fortifications, etc.
10. Work in wood: *a*, methods of felling trees, making planks and all reducing processes; *b*, shaping, bending and joining; *c*, drilling, sawing, smoothing,

d, painting and polishing; *e*, use of fire; *f*, tools; *g*, list of objects made of wood; *h*, technique of carving.

11. Work in stone: processes, forms, and uses.
12. Work in bone, ivory, and shell.
13. Work in metals.
14. Feather-work, quill technique, bead technique, and all special products not enumerated above.

DISTRIBUTION OF MATERIAL TRAITS

One cannot take up problems in the distribution of material traits in America without acknowledging the extensive work of the late O. T. Mason. Though deeply interested in logical classification and genetic problems he rarely permitted these conceptions to obscure the geographical relations of traits. Thus no matter what points of view may ultimately prevail in anthropology, his works will stand at the head of the reference list.

CULTURE AREAS

It is customary to divide the continent into culture areas the boundaries to which are provisional and transitional, but which taken in the large enable us to make convenient distinctions. North of Mexico we have nine culture areas: the Southwest, California, the Plateaus, the Plains, the Southeast, the Eastern Woodlands, the Mackenzie, the North Pacific Coast, and the Arctic areas. Each of these is conceived as the home of a distinct type of culture; but when we take a detailed view of the various tribal groups within such an area we find a complex condition not easily adjusted to a generalized type.

Plains Area. In the Plains area we have at least thirty-one tribal groups, of which eleven may be considered as manifesting the typical material culture of the area.—The Assiniboiné, Arapaho, Blackfoot, Crow, Cheyenne, Comanche, Gros Ventre, Kiowa, Kiowa-Apache, Sarsi, and Teton-Dakota. The chief traits of this culture are the dependence upon the buffalo and the very limited use of roots and berries; absence of fishing; lack of agriculture; the tipi as a movable dwelling; transportation by land only with the dog and the travois (in historic times with the horse); want of

basketry and pottery; no true weaving; clothing of buffalo and deerskins; a special bead technique; high development of work in skins; special rawhide work (parfleche, cylindrical bag, etc.); use of a circular shield; weak development of work in wood, stone, and bone.

In historic times these tribes ranged from north to south in the heart of the area. On the eastern border were some fourteen tribes having most of the positive traits enumerated above and in addition some of the negative ones, as a limited use of pottery and basketry, some spinning and weaving of bags, rather extensive agriculture and alternating the tipi with larger and more permanent houses covered with grass, bark, or earth, some attempts at water transportation. These tribes are: the Arikara, Hidatsa, Iowa, Kansa, Mandan, Missouri, Omaha, Osage, Oto, Pawnee, Ponca, Santee-Dakota, Yankton-Dakota, and the Wichita.

On the western border were other tribes (the Wind River Shoshone, Uinta and Uncompahgre Ute) lacking pottery, but producing a rather high type of basketry, depending far less on the buffalo but more on deer and small game, making large use of wild grass seeds, or grain, alternating tipis with brush and mat-covered shelters.

Also on the northeastern border are the Plains-Ojibway and Plains-Cree who have many traits of the forest hunting tribes as well as most of those found in the Plains. Possibly a few of the little-known bands of Canadian Assiniboine should be included in this group in distinction from the Assiniboine proper.

These variations from the type are, as we shall see, typical traits of the adjoining areas, the possible exception being the earth- lodges of the Mandan, Pawnee, etc. On the other hand, the tribes of the area as a whole have in common practically all the traits of the typical group.¹ For example, the Mandan made some use of tipis, hunted buffalo, used the travois, worked in skins and raw-

¹ The reader should bear in mind that all the interpretations and assumptions in this paper are limited absolutely to the bounds of material culture and that no consideration is given to the applicability of the several conclusions to other aspects of culture. Hence, the word *culture*, unless otherwise stated, is to be taken as excluding all traits not enumerated in the topical list.

hide, and armed and clothed themselves like the typical Plains tribes, but also added other traits, pottery, basketry, agriculture, and earth-lodges. Thus we see that while in this area there are marked culture differences, the traits constituting these differences tend to be typical of other areas and that, hence, we are quite justified in taking the cultures of the central group as the type for the area as a whole.¹

Plateau Area. The Plateau area joins the Plains on the west. It is far less uniform in its topography, the south being a veritable desert while the north is moist and fertile. To add to the difficulties in systematically characterizing this culture, arising from lack of geographical unity, is the want of definite information for many important tribes. Our readily available sources are Teit's Thompson, Shushwap, and Lillooet; Spinden's Nez Percé; and Lowie's Northern Shoshone; but there is also an excellent summary of the miscellaneous historical information by Lewis. In a general way, these three intense tribal studies give us the cultural nuclei of as many groups, the Interior Salish, the Shahaptian, and the Shoshone. Of these the Salish seem the typical group because both the Nez Percé and the Shoshone show marked Plains traits.² It is also the largest, having sixteen or more dialectic divisions and considerable territorial extent. Of these the Thompson, Shushwap, Okanagan (Colville, Nespelim, Sanpoil, Senijixtia), and Lillooet seem to be the most typical. The traits may be summarized as: extensive use of salmon, deer, roots (especially camas), and berries; the use of a handled digging-stick, cooking with hot stones in holes and baskets; the pulverization of dried salmon and roots for storage; winter houses, semi-subterranean, a circular pit with a conical roof and smoke hole entrance; summer houses, movable or transient, mat or rush-covered tents and the lean-to, double and single; the dog sometimes used as a pack animal; water transportation weakly developed, crude dug-outs and bark canoes being used; pottery not known; basketry highly developed, coil, rectangular shapes, imbricated technique; twine weaving in flexible bags and mats;

¹ Consult: Wissler, (a), (b), (c).

² Consult: Lewis; Teit, (a), (b), (c); Spinden; Boas, (b); Hill-Tout; Lowie.

some simple weaving of bark fiber for clothing; clothing for the entire body usually of deerskins; skin caps for the men, and in some cases basket caps for women; blankets of woven rabbitskin; the sinew-backed bow prevailed; clubs, lances, and knives, and rod and slat armor were used in war, also heavy leather shirts; fish spears, hooks, traps, and bag nets were used; dressing of deerskins highly developed but other skin work weak; upright stretching frames and straight long handled scrapers; while wood work was more advanced than among the Plains tribes it was insignificant as compared to the North Pacific Coast area; stone work was confined to the making of tools and points, battering and flaking, some jadeite tools; work in bone, metal, and feathers very weak.

The Shahaptian group includes tribes of the Wailatpuan stock. The underground house seems to be wanting here, but the Nez Percé used a form of it for a young men's lodge. However the permanent house seems to be a form of the double lean-to of the north. In other respects the differences are almost wholly due to the intrusion of traits from the Plains. Skin work is more highly developed and no attempts at the weaving of cloth are made, but there is a high development of basketry and soft bags.

The Northern Shoshonean tribes were even farther removed toward Plains culture, though they used a dome-shaped brush shelter before the tipi became general; thus, they used canoes not at all, carried the Plains shield; deer being scarce in their country they made more use of the buffalo than the Nez Percé, depended more upon small game and especially made extensive use of wild grass seeds, though as everywhere in the area, roots and salmon formed an important food; in addition to the universal sagebrush bark weaving they made rabbitskin blankets; their basketry was coil and twine, but the shapes were round; they had some steatite jars and possibly pottery, but usually cooked in baskets; their clothing was quite Plains-like and work in rawhide was well developed; in historic times they were great horse Indians but seem not to have used the travois either for dogs or horses. The remaining Shoshone of western Utah and Nevada were in a more arid region and so out of both the salmon and the buffalo country, but

otherwise their fundamental culture was much the same, though far less modified by Plains traits. The Wind River division, the Uinta or Uncompahgre Ute, it should be noted, belong more to the Plains area than here, and have been so classed. In the extreme western part of Nevada we have the Washo, a small tribe and linguistic stock, who in common with some of the little-known Shoshonean Mono-Paviotso groups seem to have been influenced by California culture. Among other variants, their occasional use of insects as food may be noted. On the north of our area are the Athapascan Chilcotin whose material culture was quite like that of the Salish, and to the northeast the Kutenai with some individualities and some inclinations toward the Plains.

In general, it appears that in choice of foods, textile arts, quantity of clothing, forms of utensils, fishing appliances, methods of cooking and preparing foods, there was great uniformity throughout the entire area, while in houses, transportation, weapons, cut and style of clothing, the groups designated above presented some important differences. As in the Plains area we find certain border tribes strongly influenced by the cultures of the adjoining areas.

California Area. In California we have a marginal or coast area, which Kroeber divides into four sub-culture areas. However, by far the most extensive is the central group to which belongs the typical culture. Its main characteristics are: acorns, the chief vegetable food, supplemented by wild seeds, roots and berries scarcely used; acorns made into bread by a roundabout process; hunting mostly for small game and fishing where possible; houses of many forms, but all simple shelters of brush or tule, or more substantial conical lean-to structures of poles; the dog was not used for packing and there were no canoes, but used rafts of tule for ferrying; no pottery but high development of basketry, both coil and twine; bags and mats very scanty; cloth or other weaving of twisted elements not known; clothing was simple, and scanty, feet generally bare; the bow, the only weapon, sinew-backed usually; work in skins very weak; work in wood, bone, etc., weak; metals not at all; stone work not advanced. With the single exception of basketry we have here a series of simple traits which tend to great uniformity.

As with the preceding areas we must again consider intermediate groups. In the south the characteristic linguistic individuality vanishes to make room for large groups of Yuman and Shoshonean tribes; here we find some pottery, sandals, wooden war clubs, and even curved rabbit sticks, all intrusive. The extinct Santa Barbara were at least variants, living upon sea food, having some wood work, making plank canoes, and excellent workers of stone, bone, and shell. In northern California are again the Karok, Yurok, Wishok, Shasta, and Hupa and other Athapaskan tribes; here sea food on the coast and salmon in the interior rival acorns and other foods; dug-out canoes; rectangular gabled houses of planks with circular doors; basketry almost exclusively twined; elkhorn and wooden trinket boxes; elkhorn spoons; stone work superior to that of central California; the occasional use of rod, slat, and elkskin armor and also basket hats of the northern type. These all suggest the culture farther north.¹

North Pacific Coast Area. Ranging northward from California to the Alaskan peninsula we have an ethnic coast belt, known as the North Pacific Coast area. This culture is rather complex and presents highly individualized tribal variations; but can be consistently treated under three subdivisions: (a) the northern group, Tlingit, Haida, and Tsimshian; (b) the central group, the Kwakiutl tribes and the Bellacoola; and (c) the southern group, the Coast Salish, the Nootka, the Chinook, Kalapooian, Wailatpuan, Chimakuan, and some Athapaskan tribes. The first of these seem to be the type and are characterized by: the great dependence upon sea food, some hunting upon the mainland, large use of berries; dried fish, clams, and berries are the staple food; cooking with hot stones in boxes and baskets; large rectangular gabled houses of upright cedar planks with carved posts and totem poles; travel chiefly by water in large sea-going dug-out canoes some of which had sails; no pottery nor stone vessels, except mortars; baskets in checker, those in twine reaching a high state of excellence among the Tlingit; coil basketry not made; mats of cedar bark and soft

¹ Consult: Kroeber, (a). Also the special anthropological publications of the University of California.

bags in abundance; the Chilkat, a Tlingit tribe, specialized in the weaving of a blanket of goat hair; there was no true loom, the warp hanging from a bar and weaving with the fingers, downward; clothing rather scanty, chiefly of skin, a wide basket hat (only one of the kind on the continent and apparently for rain protection); feet usually bare, but skin moccasins and leggings were occasionally made; for weapons the bow, club, and a peculiar dagger, no lances; slat, rod, and skin armor; wooden helmets, no shields; practically no chipped stone tools, but nephrite or green stone used; wood work highly developed, splitting and dressing of planks, peculiar bending for boxes, joining by securing with concealed stitches, high development of carving technique; work in copper may have been aboriginal, but, if so, very weakly developed.

The central group differs in a few minor points; use a hand stone hammer instead of a hafted one, practically no use of skin clothing but twisted and loosely woven bark or wool; no coil or twined basketry, all checker work.

Among the southern group appears a strong tendency to use stone arrowheads in contrast to the north; a peculiar flat club, vaguely similar to the New Zealand type, the occasional use of the Plains war club, greater use of edible roots (camas, etc.) and berries, some use of acorns as in California, the handled digging-stick, roasting in holes (especially camas) and the pounding of dried salmon, a temporary summer house of bark or rushes, twine basketry prevailed, the sewed rush mat, costume like the central group.¹

Eskimo Area. The chief résumés of Eskimo culture have been made by Boas who divides them into nine or more groups, but his distinctions are based largely upon non-material traits. When we consider the fact that the Eskimo are confined to the coast line and stretch from the Aleutian islands to eastern Greenland, we should expect lack of contact in many parts of this long chain to give rise to many differences. While many differences do exist, the similarities are striking, equal if not superior in uniformity to those of any other culture area. However, our knowledge of these people

¹ Consult: Boas, (c), (d); Krause; Niblack; Emmons, (a), (b), (c).

is far from satisfactory, making even this brief survey quite provisional.

The mere fact that they live by the sea and chiefly upon sea food, will not of itself differentiate them from the tribes of the North Pacific coast; but the habit of camping in winter upon sea ice and living upon seal, and in the summer upon land animals will serve us. Among other traits the kayak and "woman's boat," the lamp, the harpoon, the float, woman's knife, bowdrill, snow goggles, the trussed-bow, and dog traction, are almost universal and taken in their entirety rather sharply differentiate Eskimo culture from the remainder of the continent. The type of winter shelter varies considerably, but the skin tent is quite universal in summer, and the snow house, as a more or less permanent winter house, prevails east of Point Barrow. Intrusive traits are also present: basketry of coil and twine is common in Alaska;¹ pottery also extended eastward to Cape Parry; the Asiatic pipe occurs in Alaska and the Indian pipe on the west side of Hudson bay; likewise some costumes beaded in general Indian style have been noted west of Hudson bay. All Eskimo are rather ingenious workers with tools, in this respect strikingly like the tribes of the North Pacific coast. In Alaska where wood is available the Eskimo carve masks, small boxes, and bowls with great cleverness.

These variants all tend to disappear between Point Barrow and Hudson bay and it may be noted that they are at the same time traits that occur in Asia, the North Pacific coast, or the Mackenzie area. Hence, we seem justified in looking toward the east for the typical material culture. From our limited knowledge it appears that the great central group from Banks land on the west to Smith sound in North Greenland is the home of the purest traits; here are snow houses, dogs harnessed with single traces, rectangular stone kettles; and the almost entire absence of wooden utensils.² In Greenland and Labrador the differences are small and apparently due more to modern European influences than to prehistoric causes.

¹ Mason asserts the occasional occurrence of coil baskets among the Central group.

² Consult: Boas, (e), (f), (g), (h); Murdoch; Nelson, E. W.

The limited study of archeological specimens by Dall, Solberg, and Boas suggests much greater uniformity in the prehistoric period, a conclusion apparently borne out by the collections made by Stefánsson on the north coast. While this is far from conclusive, it is quite consistent with the view that the chief intrusive culture is west of the Mackenzie river.

Mackenzie Area. Skirting the Eskimo area from east to west is a great interior belt of semi-Arctic lands, including the greater part of the interior of Canada. Hudson bay almost cuts it into two parts, the western or larger part occupied by the Déné tribes, the eastern by Algonkins, the Saulteaux, Cree, Montagnais, and Naskapi. The fauna, flora, and climate are quite uniform for corresponding latitudes which is reflected to some extent in material culture so that we should be justified in considering it one great area;¹ this would, however, not be consistent with less material traits according to which the Déné country is considered as a distinct area. For this reason we shall treat the region under two areas.

Our knowledge of the Déné tribes is rather fragmentary, for scarcely a single tribe has been seriously studied. Aside from the work of Father Morice we have only the random observations of explorers and fur traders. It is believed that the Déné tribes fall into three culture groups. The eastern group: the Yellow Knives, Dog Rib, Hares, Slavey, Chipewyan, and Beaver; the southwestern group: the Nahane, Sekani, Babine, and Carrier; the northwestern group comprising the Kutchin, Loucheux, Ahtena, and Khotana.

¹ The chief cultural bond through this region is the use of the caribou. The caribou ranged from Maine to Alaska and throughout all this area furnished the greater part of the clothing and tents and a considerable portion of the food. They could not be taken easily in summer but in winter were killed in drives, on the ice, or after a thaw, in the water. They were also snared. All of these methods were known from Alaska to Newfoundland. Between the Mackenzie and Hudson bay ranged the barren ground variety, whose habits were somewhat like those of the buffalo on the Plains, and the tribes in reach of their range lived upon them almost as completely as did the Indians of the Plains upon the buffalo. (See Pike, chap. 4; for map see Madison Grant in the *Seventh Annual Report, New York Zoological Society*.) Along with these widely distributed caribou traits go the great use of spruce and birchbark for canoes and vessels, babiche, and bark fiber, toboggana, and skin or bark-covered tents, the use of snares and nets.

The Chilcotin are so far removed culturally that we have placed them in the Plateau group and the Tahltan seem to be intermediate to the North Pacific center.

Of these three groups the southwestern is the largest and occupies the most favorable habitat. From the writings of Father Morice a fairly satisfactory statement of their material cultures can be made, as follows: All the tribes are hunters of large and small game, caribou are often driven into enclosures, small game taken in snares and traps; a few of the tribes on the headwaters of the Pacific drainage take salmon, but other kinds of fish are largely used; large use of berries is made, they are mashed and dried by a special process; edible roots and other vegetable foods are used to some extent; utensils are of wood and bark; no pottery; bark vessels for boiling with and without use of stones; travel in summer largely by canoe, in winter by snowshoe; dog sleds used to some extent, but chiefly since trade days, the toboggan form prevailing; clothing of skins; mittens and caps; no weaving except rabbitskin garments,¹ but fine network in snowshoes, bags, and fish nets, materials of bark fiber, sinew, and babiche; there is also a special form of woven quill work; the typical habitation seems to be the double lean-to, though many intrusive forms occur; fish-hooks and spears; limited use of copper; work in stone weak.²

Unfortunately, the data available on the other groups are less definite, so that we cannot decisively classify the tribes. From Hearne, Mackenzie, and others it appears that the following traits

¹ These are often woven on a frame similar to the skin-dressing frame but without loom-like appliances.

² The following statement as to the archeology of the southwestern group may be noted:

"Throughout the whole extent of their territory, no mounds, enclosures, fortifications of a permanent character or any earthen works suggesting human agency are to be found, nor is their existence, past or present, even as much as suspected by any Carrier, Tse'kélne or Tsikoh'tin. In the same manner, pottery, clay implements, perforated stones, mortars, ceremonial gorgets, gouges, stone sledges and articles of shell either plain, carved, or engraved, have to this day remained unknown among them. They did formerly, and do still occasionally, use stone pestles. But for the mortars common among natives of most heterogeneous stocks, they substitute a dressed skin spread on the ground whereon they pound dried salmon, salmon vertebrae, bones, etc." (Morice, *a*, 35.)

prevailed over the entire Déné area: the twisting of bark fiber without spindle and its general use, reminding one of sennit; snares and nets for all kinds of game; the use of spruce and birchbark for vessels and canoes; basketry of split spruce root (*watap*) for cooking with hot stones noted by early observers; the toboggan; in summer the use of the dog to carry tents and other baggage; extensive use of babiche; the short-handled stone adze; iron pyrites instead of the firedrill and fungus for touchwood; the use of the cache; and above all, dependence upon the caribou. These seem to be the most characteristic traits of the Déné as a whole and while neither numerous nor complex are still quite distinctive.

Some writers have commented upon the relative poverty of distinctive traits and the preponderance of borrowed, or intrusive ones. For example, the double lean-to is peculiarly their own, though used slightly in parts of the Plateau area; but among the southwestern Déné we frequently find houses like those of the Tsimshian among the Babine and northern Carrier, while the Skena and southern Carrier use the underground houses of the Salish, and among the Chipewyan, Beaver, and most of the eastern group, the skin or bark-covered tipi of the Cree is common. Similar differences have been noted in costume and doubtless hold for other traits. Pemnican was made by the eastern group. According to Hearne some of them painted their shields with Plains-like devices. In the northwestern group we find some sleds of Eskimo pattern. Such borrowing of traits from other areas is, however, not peculiar to the Déné, and while it may be more prevalent among them, it should be noted that our best data is from tribes marginal to the area. It is just in the geographical center of this area that data fail us. Therefore, the inference is that there is a distinct type of Déné culture and that their lack of individuality has been overestimated.¹

Eastern Woodland Area. We come now to the so-called Eastern Woodland area, the characterization of which is difficult. As just noted, its northern border extends to the Arctic and all the territory between the Eskimo above and Lakes Superior and Huron below

¹ Consult: Morice, (b), (c); Mackenzie; Hearne; Emmons, (c).

and eastward to the St. Lawrence is the home of a culture whose material traits are comparable to those of the Déné. In brief, the traits are the taking of caribou in pens; the snaring of game; the considerable use of small game and fish; the use of berry food; the weaving of rabbitskins; the birch canoe; the toboggan; the conical skin or bark-covered shelter; the absence of basketry and pottery; use of bark and wooden utensils. The tribes most distinctly of this culture are the Ojibway north of the Lakes, including the Saulteaux, the Wood Cree, the Montagnais, and the Naskapi.

Taking the above as the northern group we find the main body falls into three large divisions:

1. The Iroquoian tribes (Huron, Wyandot, Erie, Susquehanna, and the Five Nations) extending from north to south and thus dividing the Algonkin tribes.

2. The Central Algonkin, west of the Iroquois: Some Ojibway, the Ottawa, Menomini, Sauk and Fox, Potawatomi, Peoria, Illinois, Kickapoo, Miami, Piankashaw, Shawnee, also the Siouan Winnebago.

3. The Eastern Algonkin: The Abnaki group, and the Micmac, not to be distinguished from the northern border group save by their feeble cultivation of maize, the New England tribes, and the Delawares.

While the Iroquoian tribes seem to have been predominant, their material culture suggests a southern origin, thus disqualifying them for places in the type group. The Eastern tribes are not well known, many of them being extinct, but they also seem to have been strongly influenced by the Iroquois and by southern culture. We must therefore turn to the Central group for the type. Even here the data are far from adequate, for the Peoria, Illinois, Miami, and Piankashaw have almost faded away. Little is known of the Kickapoo and Ottawa, and no serious studies of the Shawnee are available. The latter, however, seem to belong with the transitional tribes of the eastern group, if not actually to the Southeastern area. Our discussions therefore must be based on the Ojibway, Menomini, Sauk and Fox, and Winnebago.

Maize, squashes, and beans were cultivated (though weakly by

the Ojibway), wild rice where available was a great staple, maple sugar was manufactured; deer, bear, and even buffalo were hunted, also wild fowl; fishing was fairly developed, especially sturgeon fishing on the lakes; pottery was weakly developed but formerly used for cooking vessels; vessels of wood and bark were common; some splint basketry; two types of shelter prevailed, a dome-shaped bark or mat-covered lodge for winter, a rectangular bark house for summer, though the Ojibway tended to use the conical type of the northern border group instead of the latter; canoes of bark and dug-out were used where possible; the toboggan was occasionally used, snowshoes were common; dog traction rare; weaving of bark fiber downward with fingers; soft bags; pack lines; and fish nets; clothing of skins, soft-soled moccasins with drooping flaps, leggings, breech-cloth, and sleeved shirts for men, for women a skirt and jacket, though a one-piece dress was known; skin robes, some woven of rabbitskin; no armor, bows of plain wood, no lances, both the ball-ended and gun-shaped wooden club; in trade days the tomahawk; deer were often driven into the water and killed from canoes (the use of the jack-light should be noted); fish taken with hooks, spears, and nets, small game trapped and snared; work in skins confined to clothing; bags usually woven and other receptacles made of birchbark; mats of reed and cedar bark common; work in wood, stone, and bone weakly developed; probably considerable use of copper in prehistoric times; feather-work rare.

When we come to the Eastern group we find agriculture more intensive (except in the extreme north) and pottery more highly developed. Woven feather cloaks seem to have been common, a southern trait. Work in stone also seems a little more complex; a special development of steatite work. More use was made of edible roots.

The Iroquoian tribes were even more intensive agriculturists and potters, they made some use of the blowgun, developed corn-husk weaving, carved elaborate masks from wood, lived in rectangular long houses of peculiar pattern, built fortifications, and were superior in bone work.¹

¹ Consult: Hoffman; Jenks; Parker, (a); Chamberlain; Carr; Turner; Skinner, (a); (b); Harrington; Willoughby.

Southeastern Area. The Southeastern area is conveniently divided by the Mississippi river, the typical culture occurring in the east. As we have noted, the Powhatan group and perhaps the Shawnee are quite intermediate. These eliminated we have the Muskogean and Iroquoian tribes (Cherokee and Tuscarora) as the chief groups, also the Yuchi, Eastern Siouan, Tunican, and Quapaw. The Chitimacha and Atakapa differ chiefly in the greater use of aquatic foods. The Caddoan tribes had a different type of shelter and were otherwise slightly deflected toward the Plains culture. We have little data for the Tonkawa, Karankawa, and Carrizo, but they seem not to have been agriculturists and some of them seem to have lived in tipis like the Lipan, being almost true buffalo Indians. These thus stand as intermediate and may belong with the Plains or the Southwest area. The Biloxi of the east, the extinct Timuqua, and the Florida Seminole are also variants from the type. They were far less dependent upon agriculture and made considerable use of aquatic food. The Timuqua lived in circular houses and, as did the Seminole, made use of bread made of coonti roots (*Zamia primila*), the method of preparing suggesting West Indian influence. The eating of human flesh is also set down as a trait of several Gulf Coast tribes. Our typical culture then may be found at its best among the Muskogean, Yuchi, and Cherokee.

The following are the most distinctive traits: great use of vegetable food and intensive agriculture; raised maize, cane (a kind of millet), pumpkins, watermelons, tobacco, and after contact with Europeans quickly took up peaches, figs, etc.; large use of wild vegetables also; dogs eaten, the only domestic animal, but chickens, hogs, horses, and even cattle were adopted quickly; deer, bear, and bison in the west were the large game, for deer the stalking and surround methods were used; turkeys and small game were hunted and fish taken when convenient (fish poisons were in use); of manufactured foods bears' oil, hickory-nut oil, persimmon bread, and hominy are noteworthy, to which we may add the famous "black drink"; houses were generally rectangular with curved roofs, covered with thatch or bark, also often provided with plaster walls

reinforced with wicker work; towns were well fortified with palisades, dug-out canoes; costume was moderate, chiefly of deerskins, robes of bison, etc., shirt-like garments for men, skirts and toga-like upper garments for women, boot-like moccasins for winter; some woven fabrics of bark fiber, and fine netted feather cloaks, some buffalo-hair weaving in the west; weaving downward with the fingers; fine mats of cane and some corn-husk work; baskets of cane and splints, the double or netted basket and the basket meal sieve are special forms; knives of cane, darts of cane and bone; blowguns in general use; good potters, coil process, paddle decorations; skin dressing by slightly different method from elsewhere (macerated in mortars) and straight scrapers of hafted stone; work in stone of a high order but no true sculpture; little metal work.¹

Southwestern Area. In the Southwestern area we have a small portion of the United States (New Mexico and Arizona) and an indefinite portion of Mexico. For convenience, we shall ignore all tribes south of the international boundary. Within these limits we have what appear to be two types of culture: the Pueblos and the nomadic tribes, but from our point of view (material culture) this seems not wholly justifiable since the differences are chiefly those of architecture and not unlike those already noted in the Eastern Woodland area. On account of its highly developed state and its prehistoric antecedents, the Pueblo culture appears as the type. The cultures of the different villages are far from uniform, but ignoring minor variations fall into three geographical groups: the Hopi (Walpi, Sichumovi, Hano [Tewa], Shipaulovi, Mishongnovi, Shunopovi, and Oraibi); Zuñi (Zuñi proper, Pescado, Nutria, and Ojo Caliente); and the Rio Grande (Taos, Picuris, San Juan, Santa Clara, San Ildefonso, Tesuque, Pojoaque, Nambe, Jemez, Pecos, Sandia, Isleta, all of Tanoan stock; San Felipe, Cochiti, Santo Domingo, Santa Ana, Sia, Laguna, and Acoma, Keresan stock). The culture of the whole may be characterized first by certain traits not yet found in our survey of the continent; viz., the main dependence upon maize and other cultivated foods (men did the cultivating and weaving of cloth instead of women as above);

¹ Consult: Swanton; Speck; Jones; Adair; Mooney. (b); MacCauley.

the use of a grinding stone instead of a mortar; the art of masonry; loom or upward weaving; cultivated cotton as textile material; pottery decorated in color; a unique type of building; and the domestication of the turkey. These certainly serve to sharply differentiate this culture.

While the main dependence was placed on vegetable food there was some hunting; the eastern villages hunted buffalo and deer, especially Taos. The most unique hunting weapon is the flat, curved rabbit stick. Drives of rabbits and antelope were practised. The principal wild vegetable food was the piñon nut. Of manufactured foods piki bread is the most unique. In former times the villages often traded for meat with the more nomadic tribes. Taos, Pecos, and a few of the frontier villages used buffalo robes and often dressed in deerskins, but woven robes were usual. Men wore aprons and a robe when needed. In addition to cloth robes, some were woven of rabbitskin and some netted with turkey feathers. Women wore a woven garment reaching from the shoulder to the knees, fastened over right shoulder only. For the feet hard-soled moccasins, those for women having long strips of deerskin wound around the leg. Pottery was highly developed and served other uses than the practical. Basketry was known, but not so highly developed as among the non-Pueblo tribes. The dog was kept but not used in transportation and there were no boats. The mechanical arts were not highly developed; their stone work and work in wood while of an advanced type does not excel that of some other areas; some work in turquoise but nothing in metal.

The Pima once lived in adobe houses but not of the Pueblo type, they developed irrigation but also made extensive use of wild plants (mesquite, saguaro, etc.). They raised cotton and wove cloth, were indifferent potters, but experts in basketry. The kindred Papago were similar, though less advanced. The Mohave, Yuma, Cocopa, Maricopa, and Yavapai used a square, flat-roofed house of wood, did not practise irrigation, were not good basket makers (excepting the Yavapai), but otherwise similar to the Pima. The Walapai and Havasupai were somewhat more nomadic.

The preceding appear to be transitional to the Pueblo type,

but when we come to the Athapaskan-speaking tribes of the eastern side of the area we find some intermediate cultures. Thus, the Jicarilla and Mescalero used the Plains tipi, they raised but little, gathered wild vegetable foods and hunted buffalo and other animals, no weaving but costumes of skin in the Plains type, made a little pottery, good coil baskets, used glass-bead technique of the Plains. The Southern Ute were also in this class. The western Apache differed little from these, but rarely used tipis and gave a little more attention to agriculture. All used shields of buffalo hide and roasted certain roots in holes. In general while the Apache have certain undoubted Pueblo traits they also remind one of the Plains, the Plateaus, and, in a lean-to like shelter, of the Mackenzie area.¹

The Navaho seem to have taken on their most striking traits under European influence, but their shelter is again the up-ended stick type of the north,² while their costume, pottery, and feeble attempts at basketry and formerly at agriculture suggest Pueblo influence.

Thus in the widely diffused traits of agriculture, metate, pottery, and to a less degree the weaving of cloth with loom and spindle, former use of sandals, we have common cultural bonds between all the tribes of the Southwest, uniting them in one culture area. In all these the Pueblos lead. The non-Pueblo tribes skirting the Plains and Plateaus occupy an intermediate position, as doubtless do the tribes to the southwest, from which it appears that after all we have but one distinct type of material culture for this area.³

WIDELY DISTRIBUTED TRAITS

Before closing this descriptive survey of material culture we may call attention to certain traits that transcend the bounds of culture areas and cannot, therefore, be so successfully localized. The bow was universal, likewise the simple art of twisting string

¹ See Goddard, p. 134.

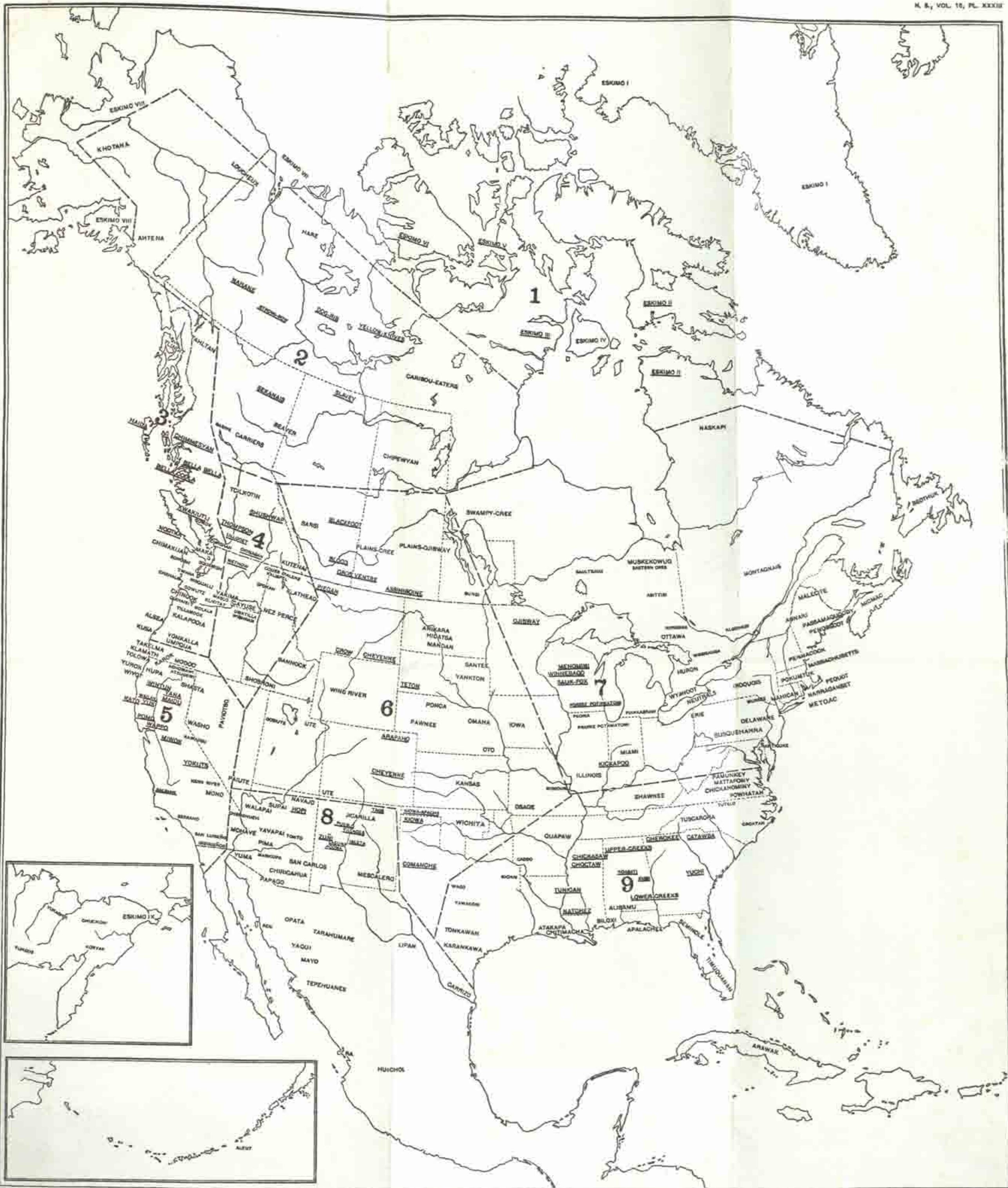
² We refer to the older type of hogan and not the modern form. We have seen photographs taken by Dellenbaugh among the Paiute north of the Colorado, showing brush shelters, but apparently supported by three or four interlocking poles. The foundation for the older Navaho hogan was three posts similarly arranged.

³ Consult: Goddard; Russell; Nordenskiöld; Mindaleff; Cushing, (a), (b).

from vegetable or animal fiber. The firedrill is another, usually the simple hand form. The domestication of the dog was practically universal, but his use for bearing burdens and as a draft animal was limited to a few areas. The smoking of tobacco in a pipe was everywhere except in the extreme north. Curiously enough, the cultivation of tobacco, while not universal, was practised in localities in every area, except the Arctic and possibly the Mackenzie. The soft-tan for deerskin, its treatment by smoke, and the use of the beaming tool are found in some parts of every area. The snowshoe was used wherever the climate or elevation made it necessary. Among other less universal traits are the use of canoes, the true moccasin, basketry, pottery, cooking with stones, weaving downward, maize culture, chipping of stone, the grooved ax and maul, quill and bead technique, sewing with sinew and without a needle, the bowdrill. These traits all tend to show certain differences as we pass from one area to another, yet in their generality they must be considered as inter-area characteristics, the significance of which will be discussed under another head.

CULTURE CENTERS AND THEIR PROBLEMS

If now we consider the brief review of traits we have just made, we note that a culture area as usually defined tends to have well within its borders a group of tribes whose cultures are quite free from the characteristic traits of other areas, or present the type of the area. It is also apparent that these typical tribes are not scattered at random over the area but are contiguous, or definitely localized. We experienced, when the necessary data were available, no great difficulty in selecting the more typical tribes, but we found it often quite impossible to decide to which of two or more areas some of the less typical tribes belonged. It seems then, that while the grouping of all the tribes in inclusive areas is convenient and often useful, the more correct way would be to locate the respective groups of typical tribes as culture centers and classify the other tribes as intermediate or transitional. Thus from this point of view we have nine localities, or material culture centers, between which there are few traits in common: (1) Central Algonkin,



MATERIAL CULTURE CENTERS IN NORTH AMERICA

(See page 467)

(2) Southeastern, (3) Pueblo, (4) Plains, (5) Plateau, (6) California, (7) North Pacific, (8) Mackenzie, and (9) Eskimo. The remaining tribes then fall naturally into intermediate groups: for example, as intermediate to the Central Algonkin and Plains cultures are the Plains-Ojibway, Plains-Cree, Santee, Iowa, and perhaps the Arikara, Mandan, Hidatsa, Peoria, Ponca, Omaha, Pawnee, Oto, Kansas, Missouri, Osage, and Illinois; intermediate to the Plains and the Southeast, the Wichita, the Caddo tribes, the Tonkawa, and Karankawa. In this way we are also able to handle more difficult cases, as the Southern Ute and Jicarilla Apache who stand intermediate to the Plains, Pueblo, and Plateau cultures. On more general grounds a classification by culture to be serviceable must avoid the necessity for too great exactness. The division of a whole continent between a number of areas demands a kind of exactness that is irrelevant to the problems involved. In this respect the method of localizing centers is quite superior, for they can be located without difficulty by the habitats of the few tribes manifesting the separate cultures in their most typical forms.¹ It is then of no great moment if one is omitted, for by the observed rule of geographical continuity it will be found in contact with the type group and hence relatively one of the least intermediate tribes. However, our purpose is not to establish a method of classification but to discuss certain problems arising from the foregoing observations of trait distribution.

¹ The most typical tribes at each center are designated on the map accompanying this article by underlining. The material culture centers are numbered as follows: 1, The Arctic Area; 2, The Mackenzie Area; 3, The North Pacific Area; 4, The Plateau Area; 5, The California Area; 6, The Plains Area; 7, The Eastern Woodland Area; 8, The Southwestern Area; 9, The Southeastern Area. As stated above the designation by centers is far less arbitrary than the division of the continent into inclusive areas; yet practical considerations make such a demarcation desirable. Accordingly, we have tentatively drawn lines grouping the tribes by their nearest centers. The ideal is to draw the lines through the points of cultural balance, or at the place where the characteristic material traits of one center equal in number and weight those of other centers. Lack of full data and well developed methods for the evaluation of traits makes it impossible to place these lines with geographical precision; hence they must be taken as approximate. This is particularly true of points where three material areas meet, as in Nevada, Texas, and Alaska. Yet, notwithstanding these uncertainties, it is quite improbable that the error of position at any point will exceed that of a single tribal unit. This map was first published in hall labels for the American Museum of Natural History.

Let us, therefore, return to the observed peculiarity of geographical continuity among the habitats of the tribes making up the centers. The fact is plain and has scarcely escaped the notice of a single serious student. Yet, while many have called attention to the inter-gradations of culture, few, for example, have considered the significance of the rarity of abrupt breaks in its continuity in respect to the question of stability *vs.* migration of political units. And again, the significance of this observed continuity relative to the problem of independent invention *vs.* diffusion of traits seems to have almost escaped notice.

One of the first problems to confront us is that of the permanency of these material culture centers. In the first place their very continuity is a strong presumption that their points of origin are to be found near their historic bounds. For instance, we note that the tribes in a culture center have only cultural unity, for they are scarcely ever united politically or speak mutually intelligible languages. It is curious how such uniformity of material culture may be found between neighboring tribes who when on the warpath kill each other at sight: it would seem that such hostility is more of a game than real war. But to return to our problem, such lack of unity makes it difficult to see how in case of invasion from without a simple reaction to migration factors could move the whole group of disparate tribes as a body; it seems much more reasonable that their continuity would be broken. Upon these points we have some check data. For example, in California, the Plains, and Pueblo centers we have great material uniformity with notorious linguistic and political diversity. Then we have the case of the Cheyenne who seem to have been forced into the Plains center where they readily passed from an intermediate state to a typical one.¹ Likewise, the Shoshonean Hopi in the Pueblo center, the Athapascan Kato in California, and the Chilcotin in the Plateau area seem each to have been caught up by these several cultural swirls and reduced to the type. These examples, however, only suggest the tendency for the various centers to preserve their continuity. On the other hand, definite examples of tribes being

¹ Mooney, (a).

forced outward into intermediate positions do not readily come to hand. The Iroquois present a probable case. The evidence seems to warrant the assumption that they are of southern origin and erupted into the Eastern Woodland area, virtually cleaving the continuity of the Algonkin tribes.¹ Just what happened to their material culture can not be stated for want of careful studies. The use of the dome-shaped Algonkin wigwam on both sides of the Iroquois hiatus; and the probable Iroquois adoption of the art of maple-sugar making on the one hand, with the failure of the Iroquois to impart correspondingly characteristic traits to the flanking Algonkin on the other, is consistent with our assumption, but little weight should be given it until more carefully investigated. Yet, in any event, the Iroquois of historic times were not typically southeastern in culture and are at least suggestive negative evidence in support of our assumption. Granting such a disruption of the older Algonkin center, the somewhat untypical culture of the Central Algonkin is intelligible. In his studies of the Plateau center Boas seems to justify the assumption of a Salish migration to the coast; but if such did occur, the typical culture broke down and became intermediate, since we find it so in historic times. Thus what evidence we have seems to indicate that by separating a tribe from a center its material culture is made intermediate and by joining a tribe to a center its culture is made typical. Hence, unless we find data to support the wholesale movement of a material culture center, we must assume stability of habitat during its historic life. We need not, however, assume stability as to its political, linguistic, and somatic unit constituents; but it is clear that abrupt wholesale displacement of them or anything short of the gradual infiltration of new units would tend to destroy the type. We have been long familiar with the lack of correlation between culture, language, and somatic type, but it is doubtful if we yet comprehend the phenomenon.

In material culture we have one of the two great groups of anthropological problems for whose solution the ethnological and archeological methods are equally serviceable. It is chiefly by the

¹ Boyle.

use of the latter method that we approach the problem as to the relative ages of the historic centers and the existence of earlier centers. As yet, the results of archeological studies have not advanced sufficiently to give very satisfactory answers to these questions, but so far as they go they favor the great age of these centers. Thus the work of Smith in the Plateau center indicates considerable age and fails to reveal an equally developed predecessor.¹ Again, in California, Nelson finds very old shell deposits but still nothing radically different from the type culture.² In the Southwest we have evidence of long occupancy by the Pueblo type. Smith's yet unpublished work in the Plains center brings to light no predecessors. In the Central Algonkin center, the case is not clear, owing to the uncertainty as to the mound culture in the western part of the Eastern Woodland area, but in the eastern part around the lower Hudson and in New Jersey we find a condition similar to that in the Plateau center.³ Thus, in a general way the geographical stability of our material culture centers is confirmed by archeological evidence.

Perhaps it should be noted that the tendency of archeological investigation is to show some development in richness and complexity. Thus Smith's results in the Plateau center and Nelson's shell-heap work in California show simpler and somewhat cruder cultures for the lower parts of their deposits, but the persistence of

¹ Smith, (a).

² Nelson, N. C., (a), (b).

³ Skinner, (c). As we have suggested, it is possible that the Iroquoian expansion struck the old and original center of the Algonkin tribes. Mr Parker finds sites in New York where Iroquoian remains overlie others of Algonkin type, yet many Iroquoian sites bear every indication of respectable age. (Parker, (b), p. 88.) Hence the present Algonkin center can not be a recent development. Professor Dixon's recent paper (pp. 549-566) calls attention to the assumed superposition of cultures on the Atlantic side of the continent; but in no case has a careful analysis of the area been made. Yet we are here concerned only with the archeology of the territory occupied by the few tribes forming our material centers, and the complications cited by Dixon are chiefly in the territories of intermediate tribes and on the extreme margins of the continent. Our discussion has not sought to make the centers the first American cultures, but only to show that they are relatively old. We may add that one of the best ways to approach the correlation of eastern ethnology and archeology would be to investigate the territory at a center and use the types thus obtained as the point of departure.

many fundamental forms throughout suggests that the succeeding cultures were built upon the foundation laid down at what seems to have been the period of earliest occupancy. This also seems to be true of shell and other deposits in the vicinity of New York City. Even in the Pueblo center we find a similar condition. So the best interpretation we can give the observed data is that in the formative period of North American material cultures the types now appearing in our centers were localized but less differentiated and that the striking individuality they now possess resulted from a more or less gradual expansion along original lines.

If, as we now have reason to believe, the material cultures of these centers possess great vitality, are often able to completely dominate intrusive cultural units and so keep to their habitats as it were, it may be well to inquire if there are not objective causes for this persistence of localization.

It is natural to suspect the subtle influence of the environment, since the fauna and flora of the locality are certain to leave their stamps upon material culture. One of the most distinctive characteristics is the tendency to specialize in some one or two foods. In California it is the acorn; Plateau, salmon and roots; on the North Pacific coast, sea food; Mackenzie, caribou; Plains, the buffalo; Southwest, maize; Southeast, maize and roots; the Eastern Woodlands, wild rice and maple sugar. We here refer to the prepared and stored foods, the staples; though in quantity they may at times be minor foods, they play a very necessary rôle. All the centers have more or less elaborate processes of preparation involving technical knowledge: for example, the making of acorn flour and bread, the roasting of camas, etc. These processes tend to spread throughout the area of supply. Thus the acorn industry extends well up into Oregon far beyond the California center; the roasting of camas to the mouth of the Columbia and also to the Blackfoot of the Plains, etc. Again we note certain specializations of manufacture; California, baskets; North Pacific coast, boxes and plank work; the Plains, rawhide work (*parfleche*, bags, etc.); Mackenzie, birch-bark (canoes, vessels, etc.); Plateau, sagebrush weaving; Southwest, textiles and pottery; Southeast, cane and

fiber weaving; the Eastern Woodlands, knot bowls and bass fiber weaving. Types of shelter present similar distributions and so do many other traits. All of these traits are seen to reach out far beyond the borders of the respective type centers. While foods are quite dependent upon the faunal and floral distributions, some other traits are not (pottery, for example). In any case the people have but chosen a few of the possibilities and specialized in them, leaving many other resources untouched. Apparently we have here the fixity of habit or custom, a group having once worked out a process, like the use of acorns, its practice tends to find its way over the contiguous acorn area and, where established, to persist. The successful adjustment to a given locality of one tribe is utilized by neighbors to the extension of the type and to the inhibition of new inventions, or adjustments. Therefore, the origin of a material center seems due to ethnic factors more than to geographical ones. The location of these centers is then largely a matter of ethnic accident, but once located and the adjustments made, the stability of the environment doubtless tends to hold each particular type of material culture to its initial locality, even in the face of many changes in blood and language. Perhaps here at last we have laid bare the environmental factor in culture and chanced upon the real significance of the long observed lack of correlation between culture, language, and anatomy.

Before we leave this subject it may not be amiss to examine the cultural relations of the few tribes constituting one of our centers. It is an axiom that absolute cultural identity is impossible, for this is but another way of asserting variation. We may expect, therefore, certain tribal individualities. Our conception of a type unit is one in whose culture there are no appreciable traits characteristic of other centers. When we select a group of tribes as the constituents of a center, we do not assume absolute identity in culture; for the facts are plain, that the gradation observed among the intermediate tribes extends into the typical group. It must follow, therefore, that some one tribe is the most typical, or manifests the type culture in its purest form. As an experiment, take the Plains group to which the Blackfoot, Gros Ventre, Assiniboine, Crow,

Teton-Oglala, Arapaho, Cheyenne, Kiowa, and Comanche clearly belong. Then by cancellation proceed to eliminate the variants, or those tribes manifesting traits characteristic of other centers. If we take shelter, the brush lodge tendencies of the Comanche eliminate them; packing by dogs without the travois, the Crow, Kiowa, and Comanche; occasional water transportation in bark canoes, the Assiniboine (historical data); the use of fur caps, certain northern forms of bags, the Blackfoot and Gros Ventre; on historical data as to costume, the Cheyenne; absence of special forms of shirts for men, the Kiowa, Cheyenne, Arapaho, and Comanche; a one-eared tipi, the Kiowa and Comanche; and some use of hooded-coats for men, the Blackfoot, Gros Ventre, and the Crow. We have now eliminated all save the Teton-Oglala. The Arapaho stand next, and then the Crow. If we line these up according to certain parfleche peculiarities and certain types of bags frequent among westward intermediate tribes, we discount the Arapaho. If it were not for early historical data on the Cheyenne, they would lead the Arapaho. So far as the data go the Cheyenne since their migration were in most intimate contact with the Teton and the Arapaho. Thus our finding is consistent and also quite suggestive. We have good grounds for localizing the center of Plains culture between the Teton, Arapaho, Cheyenne, and Crow, with the odds in favor of the first.¹ When we turn to a map we find again geographical continuity, these four tribes being neighbors. Further, they are in the very heart of the area for the typical tribes. Similar treatment of other central groups gives analogous results, though not always so nicely balanced geographically. It seems, then, that when we come to deal with the distributions of associated material traits, we find certain points where specialization and individuality are greatest.

¹ Considerations of space make it necessary to omit a discussion of the relative significance of these traits and a justification of the procedure. See Galton's remarks (p. 270) on weighting cultural characters. The reducing of a center to a single tribe is presented only as the logical finale of our classification, the political identity of the tribe in question is not now important. It is clear that when we commit ourselves to a classification based upon the similarities of traits, and accept the principle of inter-gradation, we must expect to designate some one or two tribes as the most typical.

If we should proceed by the above method of determination, we should ultimately specify nine political or social units whose material cultures could be taken as the individualized American types. Thus these studies of distribution lead us into new and perplexing problems. We seem to be dealing with ethnic forces, the lines of whose radiation are approximately determinable, but whose directions of movement are by no means obvious. What are the points of origin? Are these nine hypothetical tribes the originators of these cultures, or even the perpetuators from whom all influences start? Or, are they but the resultants of forces moving in the opposite direction, and then from whence? One line of inquiry suggests itself. Since these centers may well be but the type units of a larger group, we may approach this problem by seeking for traits common to the centers and for evidence of their reaction upon each other, or in other words consider the distribution of the few very general traits previously enumerated.

The cultivation of maize was spread over a considerable part of the continent. It was universal in the Southwest; among all the tribes intermediate to the Plains, Central Algonkin, and Southeastern centers, except those of the extreme north and possibly the Tonkawa; all of the Southeastern area except a few on the Gulf coast, and all of the Eastern Woodland area except the extreme north. Scarcely any of the intermediate tribes in the California and the Plateau areas made even the feeblest of efforts to cultivate it. The most striking fact is that if you plot this distribution over an ethnographical map you have almost absolute continuity. This continuity also extends far down into Mexico and perhaps is continuous with the maize area of South America. In this case, we have no reason to doubt the direction of diffusion, for botanical evidence makes it certain that the art of maize cultivation arose south of the Rio Grande.¹

Another interesting trait is pottery. All the tribes cultivating maize made some form of it, but it went somewhat farther into the California and Plateau areas. Yet from southern California northward to the limits of the North Pacific area, including the

¹ Harshberger.

greater part of the Mackenzie area, we have no certain traces of pottery in either historic or prehistoric times. In Alaska, however, it recurs among the Eskimo chiefly and extends eastward to Cape Parry at least. Some historical data make it probable that pottery was once made by all the type tribes of the Plains center and possibly by the Northern Shoshonean tribes. So disregarding for the present the pottery of the Arctic coast we have a distribution slightly more extensive but still coincident with the maize area. Internal continuity we have and also to the south far into South America. Roughly considered, this pottery is of two kinds, painted and incised (and stamped). The former prevails over the Southwest and eastward to the lower Mississippi, the remainder is incised or stamped and is confined chiefly to the Atlantic coast and Great Lake regions.¹ Here again we find continuity southward for painted ware. Unfortunately, we cannot call in extraneous evidence to prove the direction of pottery diffusion and it will scarcely do to trust to an analogy with maize. It has been reported that incised ware also occurs on the South American Atlantic coast.² That this is due to an older continuity between the two continents at large is unsupported by archeological evidence, but similar marked pottery from the West Indies suggests a regional and insular continuity.³

The southern origin of the blowgun is quite probable. We find it still in use among the Seminole of Florida and formerly known to most of the Southeastern tribes; it also occurs among the Iroquois. Perhaps in the same class may be placed the methods of preparing the coonti root, for the plant is found in the West Indies.

Weaving in its crudest forms is quite universal, but certain specialized forms can be definitely distributed. The art requires two unrelated processes, spinning and weaving. The fundamental art of twisting fibers into string is universal, but the Déné, Central Algonkin, Iroquois, Eastern Algonkin, and all of the tribes of the Southeastern area made thread of bark fibers. These were shredded

¹ Holmes, (b).

² Hrdlička, p. 151.

³ De Booy, p. 425.

and twisted without spindles, so far as we know, the usual method being to roll the strands on the thigh or ankle.¹ The resulting thread was woven into pack straps, but especially into bags in the north. In the south, clothing seems to have been so made, and even footwear. The method of weaving was everywhere the same, the warp strands being suspended loosely from a rod or cord and the fabrication proceeding downward, the wool being inserted by the fingers. This type of weaving occurs in the Plateau and North Pacific Coast areas. In this region, however, the weaving is of two types. The intermediate North Pacific area produced blankets of goat and dog wool. While so far as we know the weaving was downward as before, a spindle has been used in historic times. In the Plateau area sagebrush bark fiber was coarsely twisted and joined by occasional wool strands. Among the intermediate Salish, and the Kwakiutl, this method was used with cedar bark. Among certain intermediate Alaskan tribes the method appears, but for bags only and not for clothing. In the Plateau area we have some evidence that the Shoshonean tribes used clothing of sagebrush, which we presume was made by the same method. The Shahaptian, however, seem not to have made blankets or clothing of fiber.

In the Southwest we have a high development of weaving with a true loom, or upward weaving, and the use of spindles.

Thus so far as our data go we have the spindle in two regions, the Southwest and the greater part of the Plateau and North Pacific areas. If its use could be established for the Shoshonean tribes of Nevada and Idaho we should have a continuous distribution from north to south, which taken in connection with the wide use of the spindle south of the Rio Grande would again indicate a southern origin. Unfortunately, we lack data on this point. That the spindle was recently introduced to the Salish area is suggested but not proven, by the absence of bone and stone spindle whorls in archeological collections.² In the Southeastern area there seems to have been some use of an improvised spindle; a

¹ Holmes, (b).

² Smith, (a).

stick bearing a ball of clay, but anything like a true spindle whorl is rare in archeological collections.¹ In this area, however, we must allow for contact with the Southwest.

As to the loom, we have also the use of a weaving frame in parts of the Mackenzie and Plateau areas.² Rabbitskin robes were made by wrapping the warp around a rectangular frame and some of the Salish made use of a loom frame with a continuous warp of spun goat or dog hair, the two processes doubtless connected historically. On the other hand, this use of a frame without a batten or held seems to have a restricted distribution and to be discontinuous with the Southwest, though here again we lack full data as to weaving technique, for the rabbitskin blanket extends well down through the Plateaus into the Southwest. We have previously suggested that the frame for the rabbitskin blanket may have been derived from the skin-dressing frame, in which case its independent origin would be probable. The direction of weaving for rabbitskin blankets among the Cree is downward and sometimes the warp is hung from a stick or cord,³ and not wrapped around the frame. This brings us back to what seems a fundamental distinction between the weaving of the Southwest and the other areas. If we extend our data so as to include flexible baskets, we have practically a continuous distribution of downward weaving; or where the beginning is at the top of a suspended warp base, from the Aleutians, through the Tlingit, into the Déné, the northern Algonkin and thence to the Gulf and the Atlantic seaboard. Thus, it is clear that we have a widely distributed method of weaving developed on different lines from that of Mexico and the Andean region. The continuous wrapped warp on the simple frames of some Salish and Déné is also suggestive of the Southwest and in contrast to the Chilkat and Algonkin modes.

The art of basketry has a distribution similar to that of weaving. In one form or another it is found in every area from the Southwest to the Eskimo. The prevailing techniques are twine, coil, and

¹ Holmes, (b).

² See; Morice, (a); Skinner, (a); Telt, (a); Boas, (a).

³ Skinner, (a).

splint. The art was rather weak in the Plains, its almost entire absence from the Plains center having been noted. In the main, basketry is found intensified in two regions, the western mountainous belt and the eastern Atlantic belt. Though coil baskets were occasionally made by the Central Eskimo, the Ojibway and possibly other Eastern and Southeastern Indians (Mason), they are characteristic of the western area where they have a continuous distribution from Alaska¹ to the Rio Grande. One peculiarity of this distribution is that it is inland, the Tlingit and practically all the tribes of the coast down to the Californian center using the twine method. On the other hand, the twine technique is practised in the coil area, except perhaps in the extreme north. As we have previously noted, there is a continuous distribution for the flexible basket and bag woven from suspended warp, from the Aleutian islands southeastward to the Atlantic, which gives us another interesting problem. In contrast to this technique we have the stiff warp twine baskets of the Salish, Shoshone, California, and the Southwest tribes, again a continuous distribution suggesting a common origin. Likewise, the coil technique of this western region is distinct, because the few specimens known from the Ojibway and the Central Eskimo are sewed with a wide open stitch in a manner that indicates a different process concept.

In the east basketry specialized in cane and splints: The very strong development of cane basketry in the Southeast, taken with the previously noted cultural intrusions into the Eastern Woodland area, makes it probable that the wood splint technique is historically connected with that of cane. Cane basketry is also highly developed in eastern South America, to which the West Indies give us insular continuity.

The limits of this paper forbid the further discussion of textile distribution, but it is now clear that it presents some of the most interesting problems in material culture. The study of forms, methods of ornamentation, etc., readily differentiates local variations of greater or less distribution, the comprehensive comparison

¹ Coil baskets also extend into Siberia. The distribution for the whole North American continent has been worked out by O. T. Mason.

of which would go far toward solving the historical relations of our centers.

Coincident with the greater part of the western basketry region are the limits of stone boiling. Naturally, its distribution follows closely the outskirts of the pottery-using region. All the pottery-making tribes are pot boilers as are also the Eskimo. The extreme northern Algonkins and part of the Déné used stones but often hung bark vessels over beds of coals, a pot-boiling method. The Plains tribes were on the border line between the two great areas and varied accordingly.

Clothing is another feature of interest. The Eskimo were heavily clothed, the Déné but slightly less so. The Interior Salish, the most Eastern Shoshone, and even some Apache of the Southwest covered practically the whole body with clothing, usually of skins. In contrast to this the Indians of California and the whole Pacific Coast belt wore little clothing, except in the far north. In the Plains, the tribes of the center resembled the Shoshone while the Eastern intermediate tribes were inclined to nudity. East of the Mississippi, except in the far north, the tendency was likewise to nudity. Even in the Pueblo area men seldom wore shirts or leggings. Again we have one of those curious continuities in distribution, the real clothing of the body stretching across the Eskimo, Déné, and extreme northern Algonkin territories, dipping down through the Plateau and Plains areas almost into the Southwest where climatic conditions certainly made it inessential. This bears the earmarks of a northern intrusion and sets up at new angles the problem of the Shoshonean tribes and the beginnings of Plains culture.

In a similar manner dog transportation dips into the southern Plains. In winter dogs are used with sleds by the Eskimo and some adjacent tribes (Hearne), but in summer the Eskimo west of Hudson bay use them for packing and the dragging of tent poles, precisely as described by Coronado for the extreme southern Plains. Between these two points we have a continuous distribution of packing or dragging bundles by dogs. The wide distribution in the north and its apex-like form in the south suggest a northern origin.

If space permitted we could make a special study of specific articles of dress, the basket hat in the west, the moccasin, the rabbitskin coat, the turkey-leather mantle, etc., which, as with the textile arts, would develop many important problems. Many other traits could be studied in this way. We may note the problems of defensive armor in the Northwest,¹ the seeming Asiatic origin of the sinew-backed bow² and the bowdrill, the recent introduction of the Asiatic pipe among the Eskimo, etc.

Among other points this hasty sketch of widely distributed traits has developed at least one general line of cleavage. If we draw a line southward through the extended Plains center, along the eastern limits of the Rocky mountains, we divide the continent into two parts each of which in respect to the traits just discussed has some claim to cultural distinction. On either side of this line within the United States the cultures stand out clearly. In the main, it is along this line that textiles are differentiated, likewise in part maize and pottery. Clothing also changes here. Certain traits in the east seem to have pushed up from South America across the West Indies, others appear north of the Rio Grande as the outposts of the higher cultures of the south. Across northern Canada from east to west is the caribou culture with its associated traits. The line of cleavage we have noted in the United States seems to be the extended southern apex of the caribou area. It almost separates the east from the west, and raises a number of problems we have no space to discuss. Thus our consideration of widely distributed material traits has developed at least three general areas, with each of which the respective centers have something in common. The suggestion is that, more often than not, the tendency is for cultural continuity to range north and south on each side of this line, hence we must assume some historical connections between the respective centers. Yet, so far, there appear no indications that all the centers of the west can be classed as the former constituents of a single center; but on the east it seems quite probable that the Algonkin center has developed from an

¹ Hough; Laufer.

² Mason, (a).

ancient culture intermediate to the caribou and southeastern centers.

In the foregoing discussion of distribution we have seen positive proof of the northern spread of an important trait, maize culture engulfing three contiguous centers, and noted the analogous distribution of several other traits in which the probability of a southern origin is very great (painted pottery, loom weaving, blowguns, and tobacco). Again we have certain probabilities of culture infusion from Asia by way of Alaska, though less definite because in some cases the evidence favors the movement from America to Asia rather than the reverse. In Asia we seem to have similar continental conditions, for the great culture centers lay toward the south and exerted a strong influence upon the north, leaving the two continents in contact where their later cultures were weakest. We could, however, dismiss this peculiar inter-continental relation at once, if it were not for the belief that the Indians came from Asia via Alaska, at a relatively recent period. Each year of anthropological advance has seen the assumption become more and more of a conviction that this peopling of America could not have been much earlier than the dawn of the neolithic period in the Old World.¹ Granting this, we see that our material culture centers lie in the path of invasion and, if of considerable age, may even represent original intrusions from the Old World. As we have noted, archeological evidence seems not only to confirm the long durations of most of these centers but fails to reveal the remains of extinct predecessors.

If cultural groups came from the Old World with a neolithic or a very late paleolithic horizon they could have brought with them the following traits: knowledge of fire (presumably the wooden drill), chipping and polishing stone, the bow, the bone harpoon point, the notched arrowhead, the dog, elemental knowledge of skin dressing. There is no reason why they may not have known the simple art of twisting string, the use of nets and snares,

¹ Our complete ignorance of paleolithic Asia is now the chief obstacle to a satisfactory theory for the origin of the American race. For all we now know late paleolithic Europe may have been contemporaneous with early neolithic Asia.

been expert hunters, and in fact have possessed all the fundamental concepts of all the more general mechanical processes. This list, it will be observed, includes a considerable number of the traits common to our centers and may possibly represent the original culture of the immigrants. Yet, until we know a great deal about the earliest archeology of northern Asia, this must remain the merest speculation. On the other hand, certain very widely distributed traits are more likely of American origin and therefore must represent either older traits than those peculiar to the respective centers or more recently diffused ones. It will be noted, however, that such of these common traits as appear truly American are found to be more highly specialized and less fundamental. In short, all the status of the case seems to warrant, is the suggestion that except where a definite Old World similarity is found, most of the widely distributed traits of North America seem to have emanated from centers south of the United States, and not from Alaska, or from the Old World. This general fact has long been one of the traditions of our science, but the determination of the general northern trend of the most distinctively American traits must remain one of our problems and especially the harmonizing of our conclusions with the belief in an Asiatic origin.

Again we may consider what would happen to our centers, if we subtracted the traits suggesting the south and also those traits that seem to have come into Alaska recently. Suppose we cancel out agriculture, pottery, loom-weaving, and the use of tobacco, not to mention several minor traits. These would at once greatly reduce material differences, making all dependent upon game and wild vegetables and regulating their lives according to the resources of their respective habitats. In this way it is clear that we might reduce our centers to a primitive culture not unlike that of early neolithic Europe, whence it would not be unlikely that the development of some type individualities began after the first dispersion of tribes over the continent. In other words, there are various reasons for believing in the legitimacy of problems relating to the permanency and relatively early origin of centers. Finally, we have found a probable answer to our question as to the former genetic

relations of the material centers: viz., that in so far as they are individual they are quite independent and as indicated by the environmental, ethnological, and archeological data, developed their peculiarities approximately within the respective territories of the typical groups of tribes.

We have noted that in the few important archeological studies made for our centers, the earliest forms of culture are less complex and that there is likewise a suggestion of far greater similarity between the respective centers at that time. If then we cancel out the probable intrusive traits, as above, and discount the individualization of our centers, we reach a simpler form of culture in which the common origin of our centers is possible. Also, the general quantitative similarity of these residual traits to late paleolithic or early neolithic culture is apparent.

We may again revert to the probable antiquity of origin. For the Eskimo and Mackenzie area we have no good archeological data, but for the remaining we have at least suggestive data, and the only one for which there appears a reasonable doubt is the Plains center. This doubt arises principally from more or less vague historical indications of recent migrations on the part of the typical tribes; thus the Cheyenne are considered recent arrivals, the Plains-Cree and Plains-Ojibway are clearly migrants, the Sarsi, Arapaho, Gros Ventre, Comanche, and Blackfoot have linguistic affiliations that make their migrations quite probable; the Crow and Teton have very near relatives among the intermediate group, raising doubts as to their original habitats. In short, with the possible exception of the Kiowa, all may be suspected as relatively recent intruders. No such condition holds for the other centers. Again when we look at the great intermediate group just west of the Mississippi river, we see a striking peculiarity in the earth-lodge, which under other circumstances would be taken as the index of a new type of culture. Recalling that one of the chief characteristics of the typical group is horse culture and that this must have arisen since 1492, it becomes probable that this group arose since that date and so suggests that some of the now intermediate tribes formerly constituted a distinct culture

center, but now obscured by disintegration. It becomes necessary, therefore, to analyze the material culture of these tribes to see if the elements of an older center can be differentiated. We have previously reviewed the place of the horse among the formative factors in Plains culture, with the result that practically all traits except those absolutely associated with the horse were formed before its introduction to the continent. On the other hand, there was good reason to believe that the stimulus of the horse did solidify and intensify the particular association of traits we now take as the type. When, however, we turn again to the earth-lodge-using tribes we find the familiar maize culture of the Southeast. The very weak development of agriculture among the Central Algonkins suggests this southern influence, but we have also the general use of the shoulder-blade hoe in apparent continuity from the Mandan to the mouth of the Mississippi, not to mention forms of the Green Corn ceremonies. The weaving of buffalo hair was quite a trait in the south, and this also we find in varying degrees among the transitional tribes. The peculiar basketry of the Arikara, Mandan, and Hidatsa in its forms, materials, and especially in its decoration suggests the cane work of the south. Fortified villages were also known on the Missouri, a prominent Southeastern trait.

Central Algonkin material traits are less obvious. We have some possible influence in matting and woven bags, also some crude attempts to make sugar of boxelder and other saps. The more northern tribes gathered some wild rice and used canoes, the birchbark culture of the north making itself felt to some extent. In costume the relation is fairly clear, for we have even today a tendency toward the styles of the Central Algonkin below the Missouri, but a tendency toward the Plains costume north of that point. The method of wearing the hair followed a like distribution; the sides of the head shaved in the south, long braids in the north. These differences again remind us of our finding a Dakota tribe to be the most typical, thus pointing toward the Dakota group as one of the originators of Plains culture.

None of these traits are, however, so significant as the earth-

lodge. Its known distribution is the Arikara, Hidatsa, Mandan, Ponca, Omaha, Pawnee, Oto, Missouri, Kansas, and Osage, upon which we have commented at length in another place. Structurally it is almost unique, but nevertheless presents some vague southern resemblances. A type of thatched house formerly used on the lower Mississippi but not fully described seems to have had a framework similar to this. Again, the method of covering with earth is found in the south, but neither of these can have much weight and leave its independent origin as probable. The grass house of the Wichita is clearly related to the southern types.¹ The dome-shaped mat and bark-covered lodge of the Algonkin was used by the Iowa and sometimes by the Osage. The Eastern Dakota made some use of a rectangular cabin apparently like some of the Sauk and Fox. All of these are intrusive types and by their presence tend to isolate the earth-lodge. Yet, the tipi was in general use and we have elsewhere noted the peculiar tendency of these tribes to live in it, at all times when not actually engaged with their fields, even in mid-winter. This association between types of shelter and maize culture raises the suspicion that they may have come into the area together and so leaves us some reason to doubt the significance of the earth-lodge. The restricted distribution of the bull-boat, however, rather strengthens its claim to independent origin. We have, nevertheless, gone far enough to prove the later intermediate character of these tribes. When we note their use of the tipi, dog travois, parfleche and other rawhide work, technique of bead and quill work, weak development of textiles, large use of the buffalo, and the buffalo-hide shield, their fundamental Plains characteristics appear. These traits we have reason to believe are older than the introduction of the horse and the intensified development of the typical group. We suspect, then, the existence of an older Plains center which was strongly influenced by the Southeastern and later by the Central Algonkin centers, but nevertheless of a distinct type and probably formed before the introduction of maize culture.

In an article on the horse culture of the Plains we have cited the

¹ In this connection consult Miss Fletcher's Omaha, p. 75, for the Arikara origin of the Omaha earth-lodge.

prehistoric cultures of the tribes nearest Santa Fé, among which we can certainly place the Comanche and Kiowa, as having the basic elements of what later came to be the typical culture.¹ Our hypothesis is, that in these non-agricultural dog-using rovers after buffalo we have the outlying fringe of the older Plains culture, modified by Plateau influence, but still an indication of what prevailed at the earlier Plains center before agriculture and other foreign traits secured a footing. It was thus that the coming of the horse gave a new impetus to the Plains traits surviving among these then intermediate tribes and elevated them to the status of typical tribes. If this interpretation be correct, we have conditions similar to those in the Eastern Woodland area, the disrupting influence here being the subtle influence of intrusive native traits from the south-east and the later northward pressure of horse-using tribes. Horse culture appears here, however, as only a revived or intensified form of the older Plains culture and so does not break the sequence of the type of this area, which demands considerable antiquity for its date of origin.

If space permitted, a somewhat similar analysis of the Eastern Woodland area could be made and likewise an archeological survey of the Ohio Valley Mound area. We have, however, gone far enough to suggest a number of problems. Needless to say the various conclusions we have offered are in no way final but merely indicate new lines of research. By our characterization of the culture areas, as sanctioned by usage, we were able to determine the approximate geographical centers in which the most highly individualized cultures existed. By viewing the distribution of culture traits from the standpoint of geographical continuity, we were able to draw some conclusion as to the directions of influence for certain traits and also to define their relation to the geographical environment. We found it at least probable that it was the environment that maintained the cultural integrity and continuity of the centers, and also was largely responsible for the lack of correlation between language, culture, and somatic type.

¹ Wissler, (d).

TRAIT ASSOCIATION

In this discussion we have used the term material culture without considering in what manner the traits composing it were related. The most obvious bond between them is their mere pertaining to the same political unit. In case a group of people manifests a trait, such a trait is by virtue of that relation alone an element of their culture. We characterize or determine a type of material culture by enumerating the several traits as stated at the outset; hence, unless we can find some basis for this association other than mere presence in the life of a political unit, these traits have no functional relations to each other.

Material traits are chiefly productive processes and if we take these processes in unit cycles, their relations are not difficult to comprehend. Thus, in maize culture we have the related processes of planting, tending, gathering, preserving, storing, grinding, cooking, each of which may be quite complex and all of which are dependent one upon the other. If then we note pottery as a trait, we find another cycle of processes dependent upon each other; but between the traits of pottery and maize no such dependence is apparent. We know of no good reason why maize could not be boiled in a basket, box, or bark vessel, and yet we have found the distribution of these two traits almost coincident. This coincidence therefore can scarcely be due to functional relation between the two traits. It may be accidental, but on the other hand, may have an historical explanation in that the people from whom maize culture was derived cooked in pots. The two would thus be objectively associated and might be naïvely regarded as functionally associated, or as belonging to the same unit cycle; but it is clear that one could be taken up without the other. Another interesting example has been noted among some of the tribes intermediate to the Plains center; they lived in tipis at all times, except when engaged with the production of maize, when they occupied permanent houses of a different type. Now, the house has no known functional relation to the production of maize; hence, if the tipi sufficed on one occasion, it could upon the other. Again, it could be a mere accident, but also due to the historical association of such shelters with the cultivation of maize.

Also we may cite the case of skin clothing and dog transportation whose respective distributions approximately coincide. Both seem to come from the far north where they may be observed as two of the several traits forming the Eskimo type of culture. In general, if we take up one trait after the other, in their unit cycles of processes, we find very little support for the assumption of functional relations between the various traits in a material culture; but do find suggestions of associations brought about by historical causes.¹

Such functional independence of traits suggests the futility of all studies based upon functional assumptions, unless it be that we can show that in the long run the presence of certain traits is coincident with others. While this fundamental principle of the evolutionary school of anthropology has been generally rejected as an unwarranted assumption, it may be well to consider the possibility of mere complexity and high development in one trait being correlated with complexity and high development in others. To a certain extent this principle holds, for we do not expect very complex material developments without considerable complexity in other phases of culture; but when strictly applied to American phenomena it falls short of universality. Thus in California we have high development of basketry with great simplicity in other traits. Likewise, the use of acorns as food is in California associated with simplicity of culture, but the Iroquois² used acorn meal in a somewhat similar way, though, of course, they depended far less upon this food than did the Californians. On the other hand, while the Californians have specialized on vegetable foods, this aspect of their culture when considered as a whole is seemingly less complex than the vegetable food development of the Iroquois or the Pueblos. If, however, we analyze these cultures we find that the respective traits are not so much more complex as they are numerous, and that our estimate of complexity is based upon the totality of material culture as a whole and does not apply to the processes themselves. For example, the California acorn process is fully as complex as the Iroquois maple-sugar process.

¹ In this connection we may cite Tylor's discussion of "adhesions," pp. 245-270.

² Parker, (a).

Thus, we are brought to the view that the association of traits in material culture has no important intra-functional significance and that we must seek for extraneous causes to account for their observed correlations. We believe that historical explanations for such correlations will be found the most acceptable, for these do not exclude mere accident.

However, environmental causes are sometimes set up in opposition to historical causes. In the discussion of the Mackenzie, or Déné area, attention was called to the caribou and how a certain culture was found throughout the whole range of these animals from Newfoundland to Bering strait. The dependence upon them was so marked that, if other phases of culture were ignored, we should take the caribou range as one culture area. Further, this culture shows some indications of being continuous with the reindeer culture of the Old World. The analogous use of bark for vessels,¹ the bark-covered tipi of Siberia, and the remarkably tipi-like tents of Lapland and Norway may have a common origin. The tendency has been to attribute all these similarities to the Arctic environment. It seems more likely that the distribution of the allied reindeer and caribou alone has been the chief factor and that, as such, has served as a diffuser rather than a creator of various associated traits. The suggestion is that a culture having once developed around the caribou or reindeer, as the case may be, mere expansion and diffusion would tend to carry it along, thus making the animal itself the accidental carrier of the culture. The historical view conceives that the real cause for the various traits being associated lies in the fact that they were at some former time and place so associated. Traits may thus be perpetuated so long as the faunistic or other conditions permit and it may yet turn out that certain paleolithic traits of reindeer hunters in the Old World were still to be found in Canada and Siberia a few hundred years ago.

DIFFUSION OF MATERIAL TRAITS

We have vaguely touched upon the question as to the nature of diffusion in material culture. It is clear that in many cases the

¹ Boas in Teit's *Shushwap*, (c), pp. 477-487.

borrowing of traits must be specific in that the whole cycle of processes is acquired. Thus, the taking up of the horse culture trait by the Indians of the Plains was more than the mere acquisition of the animal, for it consisted of many more or less closely related processes, as the care of horses, methods of harnessing, riding, packing, etc., also all the technique of riding and packing gear. In war and hunting there were special evolutions, not to mention other non-material practices. It is conceivable that different tribes could devise quite different ways of doing these things and that they could have taken over the trait complex to varying degrees; but we find great uniformity in all respects, so great that it is clear that the complex was taken over entire. We have here a splendid example because the essential facts are accessible. About the only changes the Indian made in the European horse traits were those necessary to adapt them to the materials and other conditions of his life; for instance, we find saddles after European models, but of Indian materials. All the essential concepts and techniques, however, were given to the Indian at once, these problems having been solved in the Old World.

We have made a special study of women's dresses and men's shirts among the Plains Indians to be published elsewhere, from which it appears that a uniform technological concept complex is distributed among many tribes. Tribal individuality appears only in decoration and a few inessential features, but even so is rarely restricted to a single tribe and tends toward a geographical rather than a random grouping.

Maize, as we have noted, carried with it a considerable technique and along with it went the cultivation of beans and squashes or melons; everywhere where we have data these plants were cultivated simultaneously and quite uniform methods of cooking them in mixed dishes have been reported. The remarkable uniformity of this complex should be noted, for it is here again found in one about whose diffusion there can be no doubt.

While not all the traits are so complicated as the examples just cited, the distinctly simple ones are so rare that we may legitimately consider all traits as true complexes. In like manner we might

follow up the acorn complex of California, maple sugar, birchbark, camas, tipi, etc., each presenting its own special problems.

From these examples it appears that the tendency in material culture is not so much to profit by borrowed, disparate technological ideas as to take over whole complexes with all their concepts. This is in contrast to the observed condition in ceremonial traits as noted in the "pattern theory," or the tendency of a tribe to have a more or less fixed conception of its own according to which imported ceremonies are worked over.¹ The difference also serves to make clear that material culture is decidedly heterogeneous, or composed of disparate traits, whereas ceremonial culture is likely to be unified, or built around a fundamental idea. We see that in the main there is no evidence of functional relations between material traits or that they are controlled by any one concept. Further, in ceremonial traits the political units so far examined manifest decided individualities in their tribal pattern concepts, though the more objective aspects of the ceremonies themselves may be quite similar for all the tribes in a typical group, while in material traits such tribal individuality is wanting, so that it is doubtful if any of the political units in our centers can be truly credited with distinctive material cultures. It will be recalled that we once distinguished between these units by quantitative differences in traits rather than otherwise.²

Now, though material cultures taken as a whole lack tribal patterns, or individualized controlling ideas, they do tend toward specialization in the use of certain complexes, as we have noted above. In all such we have basic technological conceptions, but that such concepts dominate other technological processes is doubtful. Thus, in general literature we find the oft-repeated statement that copper is first treated as a malleable stone and so subjected to the general concepts for working stone. In a certain sense we have here a strange material subjected to a familiar technological pattern; but, if work in copper develops at all, we find it with its own distinctive cycle of processes and with its own basic conception. The

¹ Goldenweiser, p. 606.

² Wissler, (a), p. 166.

suggestion from the preceding discussion is that instances of the new application of dissociated technological ideas cannot be cited readily and, further, that when they can they will be rather the extensions of technical processes already practised by a political unit than resultants of adapting borrowed ideas.

Again we find examples like the following: In the Plains, especially in the northern half, buffalo were driven into pens or enclosures. This method was applied to antelope, also. In the Mackenzie area caribou were often driven into enclosures or through narrow lanes, which method extended even to the Eskimo of Alaska. On the east, the method was general among all the northern Algonkin tribes. It was also used in parts of the Plateau area. In this we refer to the very specific method of driving between fences into pens or lakes, for the mere process of surrounding or driving is too general to be significant. It is admissible that in the application of this process to several different species of ruminants we have a kind of pattern phenomenon, a hunting concept with continuity of distribution suggesting diffusion; but the method was nowhere exclusive and its adoption by a tribe did not require radical changes to make it conform to already established methods. Further, there are certain generalized concepts of wide application, like the pulverizing of food in mortars, which are far too fundamental for our restricted problem; but in the making of pemmican, the pulverization of dried salmon, and of dried roots in the Plateau area, we may again have the gross extension of a specific concept to new materials; but it is probable that here also we have only the application of the too generalized pulverizing concept. Anyway, the difficulty of analyzing such cases as these makes the result doubtful. Hence, it appears that the tendency in material culture is not so much to profit by borrowed ideas as to take over specific complexes; to take over one specific technological complex after the other and not to catch up from here and there disparate ideas, to be fitted into one or two unifying conceptions. This is rather in contrast to the conditions observed in ceremonial aspects of culture.

This point may be more concretely presented if we overstep the bounds of our subject and consider the forms of manufactured

objects. So far we have held strictly to the limitations of our chapter and discussed the processes of production without regard to form and decoration. It is clear, however, that the form of utensils and other manufactured objects must have an intimate association with the processes. A long time ago Holmes demonstrated the influence of materials and processes upon form and decorative designs. In some cases we have the apparent carrying over of form patterns to other classes of objects, as gourd and bark vessel forms to pottery forms, water bottle forms to baskets, etc. Boas explains the angular baskets of the Plateau center as patterned after the boxes of the North Pacific area. One reason given is that it is difficult and awkward to make a coil basket of this shape and that it must have been suggested by some other form. The correctness of this interpretation need not concern us now, since we do find among some of the Coast Salish boxes and baskets of similar forms. The Tlingit and Haida, on the other hand, used round baskets and square boxes. As already noted there is some tendency in the Southwest to the same forms for pots and baskets; but such correspondences occur in few forms only. It is possible, though not altogether probable, that the oval wooden dishes of the Eskimo are copied from Déné oval bark vessels and likewise the angular stone kettles from bark kettles. Yet, we are here dealing with one class of objects, differentiated by materials and techniques, but underlying which is one and the same vessel concept in which there is certainly a form element. As previously noted, material culture is heterogeneous and without a unifying technological concept; hence, patterns can exist only for traits based upon the same concept and even then are subordinated in detail to the nature of the materials.

In short, the "pattern theory" as applied to ceremonial traits has no similar significance in material culture; but, there are technological conceptions that prevail over considerable geographical areas and which constitute patterns of a kind, though in no case does any one of these unify the material culture of a tribe.¹ We

¹ It should be noted that we are here dealing with tribal units and contrasting their respective reactions to ceremonial and material culture traits, and not with

may conclude, then, that no significant functional connections exist among the material traits of a tribe; that between them are to be found no logical or other necessary associations, except in so far as their respective process cycles may happen to overlap, and that in consequence each trait complex presents its own distinct problem.

In this connection we find ample justification for the methods of former years according to which single complexes like fire-making, skin-dressing, basketry, etc., were taken up individually and followed over very large areas without regard to the distribution of other traits. Also it is suggested that the proper method of approach is first to analyze the complex and determine the distributions of the various unit processes. Until this is carefully done for a few typical complexes, historical, genetic, psychological or other interpretations of the phenomena cannot have firm foundations, or make substantial contributions to the development of anthropology.

MOTOR FACTORS

It is in the productive processes of material culture that we should expect to find objective signs of functional motor differences between the several groups of men, if such differences are at all significant when operating in the culture level. In any event we have a field for the development of specific problems; for example, most Indians mount the horse from the right side; some tribes coil baskets in one direction, some in the other. Have such customs a true motor basis, or are they after all susceptible of historical explanations?

First let us note the Indian method of mounting the horse. So far as we know the habit of mounting from the right side was universal west of the Mississippi and according to Adair prevailed

culture areas. The use of common materials affords a kind of process pattern, as the use of cedar, rawhide, etc., but in so far as this is a pattern it is environmental and not a part of one tribe's individuality. The present attitude in anthropology is to consider political and linguistic differences as synonymous with culture differences. In so far as these units have patterns of their own this is justifiable, but when we take up the study of the various culture traits involved, our boundaries become geographical rather than political or linguistic. This is particularly true of material traits.

among the tribes of the Southeastern area. From observation we know that in many parts of the west and southwest when Indians drive a wagon they turn to the left in passing, which is consistent with their method of mounting, for if one mounts from the right, the leader of a span must be the right-hand horse. Now, the universality of this custom among the Indians in contrast to Americans and Englishmen calls for an interpretation. Since we know that Indians are not left-handed in general, a physiological basis for the difference seems improbable. The horse culture of the western Indians came from the Spanish settlements and the same type of culture is noted by Adair in the Southeastern area, from which it follows that the striking uniformity of Indian horse culture is most satisfactorily explained by a single point of origin for all. Hence, it seems more likely that the observed uniformity in mounting is due also to historical causes and not in any way dependent upon obscure physiological differences. This does not give a final answer to the problem, since to give it an exhaustive treatment would require both historical as well as physiological and psychological research in several parts of the world.

In the direction of movement around a basket in twining or coiling we have a process in which there are but two possibilities. If we turn a basket of these varieties upside down and look at its bottom, the spiral of the elements will run either clockwise or anti-clockwise according to how the beginning was made. Kroeber has discussed the distribution of directions for coil basketry in California, without, however, reaching any conclusion as to its significance. So far as we know, no one has investigated the direction in twine baskets, where the problem seems less complicated. The usual method of handling a twine basket, as soon as the sides have taken form, is to rest it upright on the floor or lap, or incline it with the bottom next the weaver; at least this is the position shown in such photographs as we have seen. The long standing stiff warp makes this position necessary. On a *priori* grounds the tendency will be for all right-handed persons to move in a clockwise direction. The left hand will be used to hold the wefts in place as the right passes them through. We may, there-

fore, expect practically all twine baskets made by this method to show the same direction. Mr William A. Sabine checked up twine baskets in the collections of the American Museum of Natural History—241 twine baskets were examined, distributed from Alaska to the Rio Grande, and with the exception of the Aleutians, the clockwise direction was found in all but nine baskets. The twenty-five Aleutian baskets examined were all without exception anti-clockwise. This is to be expected because the Aleutians weave their baskets suspended in an inverted position, and hence weave downward. Then if they moved in the normal order, left to right, the twining would appear anti-clockwise when the basket was turned over. According to Mason¹ and Emmons the Haida wove baskets like the Aleutians, but we had at hand no authentic specimens. The Tlingit, on the other hand, seem to have woven their baskets in the usual way as the photographs by Emmons indicate.

Tlingit baskets present one peculiarity. Many of them have one direction for the bottom and another for the sides. In this case it is clear that the direction of movement was the same for both, since the smooth finish is on the inside of the bottom and on the outside of the sides. Hence, in our reading these baskets should be classed according to the outside direction. When so taken we have a total of ninety-six in clockwise direction and eight anti-clockwise. Unless some of the latter were made by suspension, they may be considered as the work of left-handed weavers. For one of these anti-clockwise baskets we have no locality, but the others are: Sitka, four, and Hoonah, three. This suggests that at least three women made these baskets.

Among other collections we have found but one specimen in which the direction of the sides changed: viz., Yurok (50.1-5968). We also found one other left-hand basket from the Hupa (50-5978).

It is now plain that the direction of movement in twine baskets is primarily a motor phenomenon, or determined by right-handedness, the actual direction of movement in relation to the weaver being always the same. Kroeber, on the other hand, found a somewhat different condition in coil baskets.² The process in coil

¹ Mason, (*b*), p. 415.

² Kroeber, (*b*), p. 49.

is sewing rather than weaving. Here we may be sure that all right-handed women will operate the bodkin with the right hand and hold the basket with the left; but they can probably sew in either direction with equal facility. If the coil is toward the left hand, that hand will move along the rim of the basket ahead of the stitching or bodkin; but if toward the right hand, the left hand will move behind. The former will give us an anti-clockwise basket, the latter the reverse, when the bodkin is inserted from the outside of the basket. If the woman works from the inside, the directions will be reversed in our reading, but she is using her hands as before. This point is clearly shown in the plates to Mason's publication: No. 235, Pima, working from the outside, left hand ahead of stitching, basket anti-clockwise; No. 215, Hopi, ditto; No. 200, Havasupai, ditto; No. 198, Saboba, working from the outside, left hand behind stitching, basket clockwise; and No. 197, Mission, working from the inside, left hand behind, anti-clockwise.¹ The last two show the effect of changing from the inside to the outside.

Now it is clear that whether a basket is worked from the inside or out, is of little significance in determining the direction of the coil, because the woman can work right-handed and still use either of the two possible directions. Here we have a chance for tribal patterns, unless the character of the materials or some other obscure factor favor one direction.

Kroeber states that the prevailing direction in California is anti-clockwise and elsewhere clockwise.² Yet in California he notes that some tribes change the direction with the form of the basket. The only tribes making all their coils in the same direction for all baskets are the Pomo (anti-clockwise), the Wailaki (clockwise), and the Yuki (clockwise). The Washo use the anti-direction but all the specimens were globular, or of one shape. As against these Kroeber notes the use of both directions by the Cahuilla, Maidu, Miwok, Yokuts, Mono, Mission, and Chemehuevi.

¹ Mason, (b).

² Kroeber examined his baskets on the inside, hence we have transposed his terms to correspond with ours.

The possible explanations for the change of direction with shape, are limited. It seems unlikely that a woman would have two directions of stitching, when one would serve as well. It is almost certain that one of these directions will prevail in a tribe; hence, the most probable thing is that when baskets of both kinds occur in a tribe, in one class the bodkin is used from the outside, in the other from the inside. Since bottle-necked and many globular baskets cannot be sewed from the inside, it seems safe to assume that a tribe making these forms and using only one direction for all baskets works from the outside. Also that the direction of coil in such baskets gives us the key to tribal hand positions, where baskets vary in shape. Thus, the Pomo are certainly "left hand ahead";¹ but also are the Maidu, Miwok, and Washo; the Cahuilla, Wailaki, Yuki, Yokuts, Mono, and Mission appear as "left-hand behind."

In order to test these interpretations we examined a large series of Southwestern baskets. Here among the Apache, Pima, and Papago the bottle-necked are anti-clockwise, and flat and open-topped baskets clockwise. For the Pima and Papago we have field studies that show one prevailing tribal hand position for all baskets, left-hand ahead.

Checking up the coil baskets in the Museum, we found almost without exception all in the Eskimo, Déné, and Plateau areas to be clockwise, with no change for shape. However, except among the Eskimo and a few Déné, the wide open mouth is almost universal, permitting working from either side. Yet, in the Plateau area where imbrication is employed, the bodkin appears to have been used from the outside; hence, throughout we may expect "left-hand behind" position. In the Southwest, the position is "left-hand ahead." Thirty baskets from the cliff houses of Utah were also "left-hand ahead," all of them flat in shape and sewed from the inside. So far as this goes, the ancient and modern basketry of the Southwest is historically related.

The distributions of the two hand positions for coil basketry are now definable. From the Colorado river northward through

¹ For confirmation see Barrett, p. 161.

the interior to Alaska one position prevails, the left-hand behind, or negative relation. A few Ojibway baskets we have seen are also negative. We can extend this distribution into Siberia, but it seems to end with the Russianized natives. South of the Colorado river the tendency is emphatically toward the opposite, or positive hand relation. Our check data for California agrees in the main with Kroeber's statements. Here we find the tribes in the central part also following the positive position, but the Shoshone and Mission Indians and also the Yokuts follow the negative. We have noted that the main body of the Shoshone use the negative hand position. Thus, our negative position area reaches the coast through southern California, separating the two smaller regions for the positive position. If it were not for this change in southern California we should have one continuous positive hand position area from central California to the Rio Grande and possibly southward.¹ When we recall the Shoshone peoples predominate in southern California, the possibility of cultural intrusion from the Plateau area is suggested. The Chemehuevi, for example, seem to practise both positions, or the basket-makers are divided into two classes, some following one mode, some the other. This tendency to vary is somewhat more in evidence among the Mission Indians than elsewhere, according to our specimens. Such mixture suggests that the tribes of southern California have been subjected to two influences. Thus, our problem becomes more complicated because on general principles the cultural independence of California basketry from that of the Southwest is open to question. Here is a real problem. We have, however, gone far enough to raise a strong presumption that a historical explanation will account for the observed differences throughout. The possible exception is the case of the Wailaki and Yuki in northern California, almost isolated by the twine-weaving tribes, and according to Kroeber using the negative position. They are in contact with the twine weavers on one side and the coil on the other. Unless they work

¹ No specimens were available to us south of the Rio Grande until we reach the extreme south of South America; here thirteen baskets all ran anti-clockwise, or like the Southwest.

all their baskets from the inside, they are certainly strong claimants for independence, though some contact with the Plateaus is not entirely impossible.

In Africa we find a development of coil basketry somewhat comparable to that of America. We have not worked out the distribution so fully but find that the greater part of the Congo and South African baskets we have seen are anti-clockwise, but those from North Africa and parts of the West Coast are clockwise. Assuming that this holds for all African baskets, we have two very different races manifesting similar ranges of differences with respect to an identical motor process.

Thus, in the main, we have another example of the familiar continuity of traits, each hand position being rather definitely segregated and the whole offering an excellent opportunity to discuss the relative merits of independent invention and diffusion. Our present interest, however, is in the motor problem. In twine basketry, we saw that the direction of weave was fixed by right-handedness, and that Aleutian baskets were different from others because they were woven downward, the actual direction of movement being the same. This difference is therefore due to objective causes and not in any sense to be explained as due to motor differences in the Aleutians. In coil work, right-handedness controls the bodkin, but seemingly not the direction of movement. Some white teachers of basketry we have consulted say they teach the anti-clockwise coil because this position of the hands keeps the designs in full view. However, they believe that the sewing can be learned from one direction as easily as the other, but their experience is that when a person has learned in one of these directions, she will find it very difficult to change over to the other. Hence, we have a case in which an initial choice can be made according to objective rather than psycho-physical conditions. Yet we cannot make this conclusion positive, for many people feel that if the choice were left to the hands, the normal direction would be positive, or anti-clockwise.¹ Nevertheless, should this prove true, the adoption of another direction could scarcely be explained

¹ See also Barrett, p. 161.

on motor grounds. Thus we are dealing with cultural phenomena and not with physiological or psychological phenomena. In another place we have suggested that there were levels, or cycles, in human activities between which there were no correlations. The suggestion in this discussion is that motor differences of an individual character are not likely to produce cultural differences. Also that when a motor element does function as a culture determinant, it is likely to be a general human characteristic and neither individual nor tribal, and so cannot be considered a cause of culture differences. We are all familiar with the vague assertions in psychological and anthropological literature that knowledge of elemental psychological differences is quite essential to the investigation of culture, but so far we have not observed any successful use of such knowledge. All our own experience has indicated that culture differentiation and psychological differentiation as now understood run in relatively independent cycles.

We make no claim that this brief consideration of certain functional problems gives us final solutions, but it certainly does suggest that they are of minor importance. Everything so far seems to favor historical explanations for cultural differentiation.

SUMMARY

As stated at the outset, there has been in recent years no formative work in material culture comparable to that in art, mythology, and social and ceremonial organization. Our intent has been to show that this is in no way due to the nature of the phenomena, but that in material culture are to be found problems of the first importance. This is particularly true for North America where, so far as we now know, we deal with but one culture period comparable to the neolithic of Europe. This condition practically joins the archeological and ethnological methods, concentrating them upon a single group of problems. Nowhere else can we get so near to the objective aspects of man's entire cultural history. For some years now our dominant studies have been of a decidedly psychological character, the symbolic aspects of art, the conceptions and motives underlying the rituals of ceremonies, language, etc. All

these prove for the time ever so much more fascinating than the description and distribution of technological processes, that the real problems in material culture are lost sight of. At the present moment attention is centered upon historical explanations for cultural similarities, which when objectified become chiefly discussions of observed geographical trait distribution. Yet, one difficulty in determining similarities in mythology, totemism, etc., is our inability to make sure of the reality of similarity. This is what lies at the root of the recent discussion of convergent evolution. Now, while similarities in material culture are not easily explained, their characteristics are objectified to such an extent that the determination of their relation is fairly simple.

This objective aspect of material culture offers opportunity for the application of experimental and scientific methods in as precise and definite a form as the various morphological sciences. In this respect it is on a par with anatomy. Every large ethnographical museum is a richly equipped laboratory, yet there has been a steady drift away from museums, some of our largest universities making practically no use of museum material in their work of instruction and research. It seems strange that in a scientific age our backs should be turned upon the one aspect of culture in which we find the experimental method in function, for modern science is most surely an outgrowth of material culture.

This brief examination of the subject has suggested the following problems:

1. The significance of continuity in the distribution of a trait.
2. The prevalence of diffusion and the relative rarity of independent invention in the essential trait elements.
3. The apparent unimportance of the motor and other functional elements of the cause-complex underlying a trait and the prime importance of the historical elements.
4. The significance of the geographical environment as a localizer, associator, or carrier of material traits; or as a continuity factor.
5. The origin and duration of the specific material centers for North America, primarily an archeological problem.

6. The analytical determination of the original elements in American culture, preparatory to inter-continental problems.

These problems are not here proposed as original with the writer, but as viewed from the somewhat unfamiliar horizon of material culture.

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AMERICAN ANTHROPOLOGICAL ASSOCIATION
TO THE NINETEENTH INTERNATIONAL
CONGRESS OF AMERICANISTS TO
HAVE BEEN HELD AT WASH-
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CONTENTS

Physical Anthropology in America. By ALEŠ HRDLÍČKA.....	308
The Present Condition of Our Knowledge of the North American Languages. By PLINY EARLE GODDARD.....	555
Ceremonialism in North America. By ROBERT H. LOWIE.....	602

PHYSICAL ANTHROPOLOGY IN AMERICA

AN HISTORICAL SKETCH

By ALEŠ HRDLÍČKA

CONTENTS

I. Introduction.....	508
II. Forerunners of American Anthropology.....	509
III. The Beginnings of American Anthropology—Samuel G. Morton.....	512
IV. Effects of Morton's Work.....	520
V. Morton's Successors—Joseph Leidy and J. Aitken Meigs.....	523
VI. J. C. Nott and George R. Gliddon.....	526
VII. Anthropology in Boston—George Peabody and Jeffries Wyman.....	528
VIII. Later History of Anthropology.....	530
IX. History of Anthropology in Washington.....	541
X. Conclusion.....	552

I—INTRODUCTION

THE term Anthropology is generally employed in this country to comprehend the entire field of researches relating to man. The present paper, however, does not aim to compass this wide range but relates exclusively to Physical Anthropology, sometimes called somatology. Geographically it is limited to the northern half of the continent and especially to that part of it under the jurisdiction of the United States, while chronologically it stops before the actual era of the science and its living representatives.

No special and comprehensive effort has hitherto been made in this direction, though as early as 1855, in his "Archæology of the United States,"¹ Samuel F. Haven gave an extended and very creditable account of the general opinions advanced to that time respecting the origin of population in the New World, and of the progress to that date of archeological and anthropological investigations in the United States. In 1898 Dr George A. Dorsey wrote the "History of the Study of Anthropology at Harvard Uni-

¹ *Smithsonian Contributions to Knowledge*, Phila., 1855, pp. 168.

versity,"¹ but he used the term "anthropology" in "its broadest, most general sense," and "somatology" received but slight mention; and in 1902 Dr George G. MacCurdy wrote on the "Teaching of Anthropology in the United States."² There are no other publications on the subject and the task before the writer was thus the more gratifying though also the more difficult one of research rather than of compilation.

The history of physical anthropology on this continent is relatively a brief one, dating back less than a century, yet preceding the beginnings of the same branch of science in most other countries and antedating the very use, in its modern sense, of the term anthropology. Also, though largely disconnected and individualistic, that is, represented by workers who arose quite incidentally, sometimes far apart and more or less independently of each other, it nevertheless presents a total record that is highly creditable and should be better known outside of this country.

It is almost wholly a history of anthropologists who were originally or at the same time medical men and especially anatomists or physiologists, and whose field of research was in a very large measure, though not exclusively, American. And this history is further distinguished by the fact that its beginnings, as to both time and mode, can be almost exactly determined.

II—FORERUNNERS OF AMERICAN ANTHROPOLOGY

In a given country the history of any new branch of science would probably show, if it could be traced, a shorter or a longer preparatory period, occupied with the growth of interest in a new direction; the beginnings of collections or assembling of data; and the first efforts at lectures, writing, and association in the new field. Back of this, however, there is, as a rule, a long, unconsciously cumulative epoch, the slow preparation of the ground. The actual birth of a new science may be counted from the commencement of substantial research work in the new field, which in due time is followed by differentiation of concepts, advanced organiza-

¹ *Denison Quarterly*, Granville, O., 1888, IV, No. 2, pp. 77-97.

² *Science*, XV, 1902, 211-216.

tion of forces and plans, standardization of procedures, and a gradual development of regular instruction. Such was the course of physical anthropology in the United States and the rest of North America.

For the fertilization of the field in this country nothing could have been more effective than the presence on the American continent of a race whose identity, composition, and origin were problems that from the date of discovery interested the whole world, a solution of which, however, never advanced beyond a maze of hypotheses. To this, toward the beginning of the 19th century, was added the fact that the white man's contact with the Indian in North America was becoming extensive, and the need of knowing the race better, physically as well as culturally, was felt with growing intensity. Good evidence of this feeling can be seen in the excellent instruction given in 1804 by President Jefferson to Lewis and Clark, for their memorable expedition to the sources of the Missouri. Besides other things they were to look into the "moral and physical circumstances which distinguish the Indians encountered from the tribes we know";¹ and the results of this expedition helped greatly to further stimulate the universal interest in the Indian. An equally marked influence in this direction was due to a growing acquaintance with the multitude of mounds in the Ohio valley and adjoining regions on one hand, and with the Peruvian, Mexican, and Central American Indian remains on the other. Added to these factors at home came potent influences from abroad. Works on the natural history, races, and variation of man were published by Buffon, Linnaeus, and Cuvier, and especially by Blumenbach² and Prichard.³ In 1789 there was organized at Paris the *Musée d'Histoire naturelle*, which eventually in its scope comprised also man; in 1800 there came into existence, in Paris, the Society of Students of Man (*Société des observateurs de l'homme*), which, although short-lived, pointed to a new sphere

¹ See *History of the Expedition under the Command of Lewis and Clark, etc.*, by Elliott Coues, 4 vols., N. Y. 1893.

² *Decades craniorum, 1790-1828* (1873); *De generis humani, etc.*, 1795 (3d ed.).

³ *Researches into the Physical History of Mankind*, 1813 (1st ed.).

of investigations of great interest; and before many years had passed the early physiological phrenology began to call attention to the importance of the study of the skull.

As the first most tangible result of these influences in North America we see the incorporation, in 1812, at Worcester, Mass., of The American Antiquarian Society, with the chief object of "collecting and preserving the material for a study of American history and antiquities."¹ We learn that, "in the early days of the Society one of the prominent features of its work was the collection of anthropological specimens"; and we find that the first two volumes of the Transactions of this Society are devoted to the American Indian and his remains.²

The year 1814 marks the beginning in Boston of The Linnean Society, the predecessor of the Boston Society of Natural History (1830); but there is no evidence that the study of man derived any special stimulus through the activities of this organization. Shortly thereafter, however, a small nucleus for anthropologic research took form through the labors of Prof. John C. Warren, the eminent anatomist and surgeon and future founder of the present Warren Anatomical Museum of Harvard University. Inspired evidently by Blumenbach's works, Professor Warren began to collect and examine skulls of different races, and in 1822 he published an "Account of the Crania of some of the Aborigines of the United States,"³ the first publication in this field on the continent. This publication, while of no permanent value scientifically, and while subscribing to the early error that the "mound-builders" were "a different people from the aborigines found here by our ancestors," is nevertheless remarkable for the systematic, technical descriptions of the specimens. In this respect it might

¹ *Transactions American Antiquarian Society*, Worcester, Mass., 1909, pp. 32.

² The first volume, published in 1820, contains Atwater's "Description of the antiquities of the Ohio and other historical states"; Hennepin's "Discovery of the Mississippi"; Johnston's "Indian tribes of Ohio"; and Sheldon's "Account of the Caribs of the Antilles." Vol. II, 1836, contains Gallatin's "Indian tribes of North America," and Daniel Gookin's "Historical Account of the Christian Indians of New England."

³ Published as part H of the Appendix to his *Comparative View of the Sensorial and Nervous Systems in Man and Animals*, Boston, 1822, pp. 120-144, pls. V-VIII.

well have served as a shining example to some later writers on the same subject.

A year before the appearance of his paper on American crania Professor Warren published *A Description of an Egyptian Mummy*,¹ and an address by him on American crania, given before the British Association, is also quoted in the *Boston Medical and Surgical Journal* (xvii, 1838, pp. 249-253), but evidently his preoccupations were such that he could give the new subject relatively little attention. That he did not lose interest in the study of human crania is evident from the fact that in 1837 he engaged no less a student than Henry R. Schoolcraft to collect Indian crania for him. Owing to various difficulties, however, the gathering of the desired material was interfered with, so that the collection was restricted. The material was eventually transferred to the Warren Museum.

In the thirties collection and study of human skulls received great impetus in this country through the establishment at Boston and Washington of phrenological societies, which interested at that time many physicians and other men of science. In 1835 the Boston Phrenological Society published a catalogue of specimens belonging to the Society derived mainly from the collections "of the late Dr Spurzheim and J. D. Holm," embracing four hundred and sixteen entries, among them more than a hundred racial skulls or casts of skulls.

Such was in brief the prodromal period of physical anthropology in this country, and we can now approach its more effective beginnings.

III—THE BEGINNINGS OF AMERICAN ANTHROPOLOGY—SAMUEL G. MORTON

Physical Anthropology in the United States, speaking strictly, begins with Samuel G. Morton, in Philadelphia, in 1830.

Morton, who was born in Philadelphia, January 26, 1799, received the degree of M.D. at the Medical College of the University of Pennsylvania in 1820 and from the Medical School of the

¹ Pamphlet 1821; and later gave "An Account of the Siamese Twin Brothers," *Amer. Med. Jour., Med. Sciences*, v, p. 253.

University of Edinburgh three years later.¹ In 1826 he began to practise medicine in Philadelphia and soon after engaged in private instruction in medicine and anatomy. Even before this, however, he became a member of the Academy of Natural Sciences of Philadelphia, took active interest in its collections which he helped to classify and arrange, and became active in several branches of natural science, particularly paleontology. During these years, as anatomist, he also became interested, through the writings of Lawrence, Virey, Bory de St Vincent, Gall, and Combe, on the one hand, and through reading the publications of such American authors as Dr Barton, Professor Caldwell, Dr J. C. Warren, Professor Gibson, Dr B. H. Coates, and Dr M'Culloh,² on the other, in the rising comparative human anatomy, in phrenology (which doubtless seemed at that time a most promising branch of research), and in questions relating to the origin and racial affiliations of the American Indians.

According to J. Aitken Meigs, "craniographic" researches were begun by Morton two years after the completion of Blumenbach's *Decades craniorum*. According to Morton himself, however, the beginning of his actual work in anthropology is related to have occurred as follows:³ "Having had occasion, in the summer of 1830, to deliver an introductory lecture to a course in Anatomy, I chose for my subject: The different forms of the skull, as exhibited in the Five Races of Men. Strange to say, I could neither buy nor borrow a cranium of each of these races; and I finished my discourse without showing either the Mongolian or the Malay. Forcibly impressed with this great deficiency in a most important branch of science, I at once resolved to make a collection for myself." The results of this resolution were that between 1830 and 1851, the latter the year of his death, Morton gathered 968 racial crania,

¹ Grant, Wm. R., *Lecture introductory to a course on Anatomy and Physiology in the Med. Dept. of Pennsylvania College, delivered October 13, 1851*; 8°, Phila., 1852, pp. 1-16. Meigs, Charles D., M.D., *A memoir of Samuel G. Morton, M.D., read Nov. 6, 1851*, published Phila., 1851, 8°, pp. 1-48.

² *Crania Americana*, preface, et seq.

³ Morton, S. G., *Account of a Craniological Collection*, *Trans. of the Amer. Ethnol. Soc.*, II, pp. 217-218, N. Y., 1848.

which, with 67 additional specimens that came soon after his death, constituted by far the largest and most valuable collection of anthropological materials then in existence.

With the augmentation of his collection grew evidently also Morton's interest in craniological research and in anthropology in general, leading eventually, with such additional stimuli as were furnished by the writings of Prichard, Lawrence, Humboldt, and possibly Anders Retzius, to active personal investigations in these lines. Finding a helping hand in the much interested and ingenious member of the Academy, John S. Phillips, Esq., Morton undertook the large task of measuring and describing his material, and the American collections received first attention. A very sensible schedule of measurements was formulated on the imperfect basis then extant; instruments where insufficient or lacking were improved or invented, and after "some years of toil and anxiety" sufficient data were gathered and excellent illustrations provided for an important publication.

In 1839 Morton was appointed Professor of Anatomy in Pennsylvania Medical College, and in the same year his truly monumental work for that time, *Crania Americana*, appeared, a volume not financed by any publisher or institution, but undertaken by the author with the assured support of only fifteen subscribers!

This first and largest work of Morton makes manifest some of the defects of the early period in anthropology, and it includes a chapter on phrenology, though it is the physiological phrenology of Morton's time and has no trace of the charlatanism later associated with the name; but these defects are slight when contrasted with the large bulk of astonishingly good work and the number of sound conclusions. One wonders at the nearness with which the measurements employed by Morton correspond with later and even present-day measurements in that line, and at the soberness and clear-sightedness of his deductions. As to phrenology, it is evident that Morton's interest in that branch was not that of a believer or promoter, but rather that of a friendly and hopeful investigator.¹ As to the lithographic illustrations of the work, they have not been excelled in beauty and accuracy.

¹ See prologue by John S. Phillips, Esq., in *Crania Americana*.

Morton's principal aims in preparing and publishing the *Crania Americana* were, in his own words, "to give accurate delineations of the skulls" representing as many Indian nations, from all parts of the American continent, as he could bring together in his collection; to show the position of the American crania with reference to those of other races; and to determine "by the evidence of osteological facts, whether the American aborigines of all epochs have belonged to one race or to a plurality of races." But thus early Morton gave attention also to the artificial deformation of skulls, and especially to the determination of the internal cranial capacity in various races, taking cognizance not only of the entire skull cavity but of its main subdivisions as well. Moreover, he presented, in 62 pages of his work, an excellent review of the contemporary anthropological knowledge of peoples in all parts of the world, a summary which shows good discrimination and much erudition.

The craniometric methods of Morton (and Phillips) call for special note. Not counting the more complex determinations of the facial angle and internal capacity, Morton took on each skull ten measurements, and of these the most important six were taken from precisely the same landmarks and in the same way as they are taken today under the recent Monaco agreement, though Morton was not remembered at that convention. These measurements and the manner in which they were made were, in the words of Morton¹ himself, as follows:

"The *longitudinal diameter* is measured from the most prominent part of the os frontis, between the superciliary ridges, to the extreme end of the occiput.

"The *parietal diameter* is measured between the most distant points of the parietal bones. . . .

"The *vertical diameter* is measured from the fossa between the condyles of the occiput bone,² to the top of the skull.

"The *occipito-frontal arch* is measured by a tape over the surface of the cranium, from the posterior margin of the foramen magnum to the suture which connects the os frontis with the bones of the nose.

"The *horizontal periphery* is measured by passing a tape around the cranium

¹ *Crania Americana*. pp. 249-250.

² The present *basion*.

so as to touch the os frontis immediately above the superciliary ridges, and the most prominent part of the occipital bone.

"The *zygomatic diameter* is the distance, in a right line, between the most prominent points of the zygomæ."

The terms used in describing the measurements are perhaps not as specific as those which would be employed today, nearly eight decades later, but the meaning is unmistakably identical. The four other measurements, which now are no more or but seldom employed, were the *frontal diameter*, taken between the anterior-inferior angles of the parietal bones, the *inter-mastoid arc and line*, and the *joint length of the face and vault*.

The *facial angle* was measured directly by an improved *facial goniometer*, while for obtaining the *internal capacity* of the skull a method was invented which, though seldom if ever duly credited, served and still serves as the basis of all subsequent procedures for obtaining this important determination with dry substances. Morton's description of the method, which deserves to be quoted in full, is as follows:¹

"*Internal Capacity*.—An ingenious mode of taking this measurement was devised by Mr. Phillips, viz: a tin cylinder was provided about two inches and three-fourths in diameter, and two feet two inches high, standing on a foot, and banded with swelled hoops about two inches apart, and firmly soldered, to prevent accidental flattening.—A glass tube hermetically sealed at one end, was cut off so as to hold exactly five cubic inches of water by weight, at 60° Fahrenheit. A float of light wood, well varnished, two and a quarter inches in diameter, with a slender rod of the same material fixed in its centre, was dropped into the tin cylinder; then five cubic inches of water, measured in the glass tube, were poured into the cylinder, and the point at which the rod on the float stood above the top of the cylinder, was marked with the edge of a file laid across its top; and the successive graduations on the float-rod, indicating five cubic inches each, were obtained by pouring five cubic inches from the glass tube *gradatim*, and marking each rise on the float-rod. The graduations thus ascertained, were transferred to a mahogany rod fitted with a flat foot, and then subdivided, with compasses for the cubic inches and parts. In order to measure the capacity of a cranium, the foramina were first stopped with cotton, and the cavity was then filled with *white pepper* seed poured into the foramen magnum until it reached the surface, and pressed down with the finger until the skull would receive no more. The contents were then transferred to the tin cylinder, which was well shaken in order

¹ *Crania Americana*, p. 253.

to pack the seed. The mahogany rod being then dropped down with its foot resting on the seed, the capacity of the cranium in cubic inches is at once read off on it."

The most important scientific conclusion arrived at by Morton in his studies of American crania and their comparison with similar material from other parts of the world, conclusions which he held strongly to the end of his life, were (1) "That the American nations, excepting the Polar tribes (Eskimo), were of one Race and one Species, but of two great Families (Toltecan and Barbarous), which resemble each other in physical, but differ in intellectual character"; and (2) "That the cranial remains discovered in the Mounds, from Peru to Wisconsin belong to the same race (the Indian), and probably to the Toltecan family."¹ These conclusions subverted the numerous loosely formed but commonly held theories respecting the racial complexity of the American natives, and of racial separation of the "Mound-builders" from the rest of the American Indians.

Besides this, Morton's work must have proved highly useful as a contemporary compendium of anthropological knowledge; it established the main proportions of the skulls of many American tribes; it gave comparisons of skull capacity in series of skulls representing the five human races of Blumenbach's classification; it shed considerable light on the subject of artificial deformation of the head among the American natives; and it gave for the first time excellent illustrations, both plates and figures, of many American crania, which could be used in comparative work by investigators to whom original American crania were not accessible.

The few erroneous statements and conclusions included were due entirely either to imperfect contemporaneous knowledge in anthropology or to lack of material. The latter deficiency, for example, was directly responsible for Morton's opinion, supported by ten skulls which he called "Mongolian" but which were in reality only those of Chinese and Eskimo, that the American race differed essentially from all others, not excepting the Mongolian.²

¹ *Crania Americana*, p. 260; also p. 62 et seq.

² *Ibid.*, p. 260.

The terms "Toltecan" and "Barbarous" were also, we now know, misnomers, and the classification of all the Indians into these two families was a mistake, though when it was made it served a good purpose as a basis for further investigation.

Morton intended to follow the *Crania Americana* with a "supplementary volume" in which to "extend and revise both the Anatomical and Phrenological tables, and to give basal views of at least a part of the crania delineated"; also to "measure the anterior and posterior chambers of the skull in the four exotic races of man, in order to institute a comparison between them respectively, and between these and those of the American Race."¹ This, on account of his untimely death, was never accomplished. Nevertheless the remainder of Morton's life was largely devoted to anthropology, and resulted in the publication of more than twenty papers on subjects relating in the main, but by no means exclusively, to America. The most important of these publications, and one that compares favorably in clearness of presentation and the validity and advanced nature of its conclusions with *Crania Americana*, was his *Crania Ægyptiaca*, published in 1844 and dealing with one hundred old and thirty-seven modern Egyptian skulls procured for Morton by a United States consul at Cairo, subsequently an anthropological author of note, George R. Gliddon. Without entering into details, it will be sufficient to say that Morton through his studies recognized definitely that "the valley of the Nile, both in Egypt and in Nubia, was originally peopled by a branch of the Caucasian race"; and that "the present Fellahs are the lineal and least mentioned descendants of the ancient Egyptians; the latter being collaterally represented by the Tuaregs, Kabyles, Siwahs, and other remains of the Lybian family of nations."

Of his remaining papers the more noteworthy were those on a "Method of Measuring Cranial Capacity"; "On Hybridity of Animals," etc.; on "The Size of the Brain in Various Races and Families of Man"; and on the "Physical Type of the American Indians."

Following is Morton's complete anthropologic bibliography.

¹ *Crania Americana*, preface, p. v.

Besides these works he published an excellent textbook on *Human Anatomy*.

Crania Americana. 4th. Phila., 1839.

Method of measuring cranial capacity. Proc. Acad. Nat. Sci. Phila., I, 1841, pp. 7-8.

Mexican Crania (Otomi, Chechemec, Tlascalan, Aztec). Proc. Acad. Nat. Sci. Phila., I, 1841, pp. 50-51.

Cranial sutures. Proc. Acad. Nat. Sci. Phila., I, 1841, pp. 68-69.

Pigmy "race" of Mississippi valley. Proc. Acad. Nat. Sci. Phila., I, 1841, pp. 215-216.

Negro skulls, capacity. Proc. Acad. Nat. Sci. Phila., I, 1841, p. 135.

Yucatan (Ticul) skeleton. Proc. Acad. Nat. Sci. Phila., I, 1842, pp. 203-204.

Observations on Egyptian ethnography, derived from anatomy, history, and the monuments. Trans. Amer. Philos. Soc. Phila., IX, 1843, pp. 93-159.

Crania Aegyptiaca. 4th, Phila., 1844.

Observations on a second series of ancient Egyptian crania. Proc. Acad. Nat. Sci. Phila., II, 1844, pp. 122-126.

Observations on the measurements of the internal capacity of the crania deposited [by Morton] this evening. Proc. Acad. Nat. Sci. Phila., II, 1844, pp. 168.

The skull of a Hottentot. Proc. Acad. Nat. Sci. Phila., II, 1844, pp. 64-65.

Two ancient Peruvian heads from Atacama deformed. Proc. Acad. Nat. Sci. Phila., II, 1845, pp. 274.

Skull of a Congo negro. Proc. Acad. Nat. Sci. Phila., II, 1845, pp. 232-233.

Skulls of New Hollanders (Australians). Proc. Acad. Nat. Sci. Phila., II, 1845, pp. 292-293.

Remarks on an Indian cranium found near Richmond, on the Delaware, and on a Chenook mummy. Proc. Acad. Nat. Sci. Phila., III, 1847, p. 330.

On an aboriginal cranium obtained by Dr Davis and Mr Squier from a mound near Chillicothe, Ohio. Proc. Acad. Nat. Sci. Phila., III, 1847, pp. 212-213.

Skeletal remains from Arica, Peru. Proc. Acad. Nat. Sci. Phila., III, 1848, pp. 39-40.

On hybridity of animals, considered in reference to the question of the unity of the human species. Proc. Acad. Nat. Sci. Phila., III, 1848, pp. 118-121.

On the position of the ear in the ancient Egyptians. Proc. Acad. Nat. Sci. Phila., III, 1848, p. 70.

The catalogue of skulls of man and the inferior animals, in the collection of Samuel G. Morton, M.D., Phila., 1849 (with two subsequent editions).

Observations on the size of the brain in various races and families of man. Proc. Acad. Nat. Sci. Phila., IV, 1850, pp. 221-224.

Four skulls of Shoshonee Indians. Proc. Acad. Nat. Sci. Phila., IV, 1850, pp. 75-76.

Ancient Peruvian crania from Pisco. Proc. Acad. Nat. Sci. Phila., IV, 1850, p. 39.

Observations of a Hottentot boy. *Proc. Acad. Nat. Sci. Phila.*, IV, 1850, pp. 5-6.

Physical type of the American Indians. In Schoolcraft, *Indian Tribes*, II, Phila., 1852, pp. 316-330. Unity of the human race, *ibid.*, III, pp. 374-375.

IV—EFFECTS OF MORTON'S WORK

Under Morton's stimulus and with his coöperation the physical anthropology of the American Indian received attention in a number of important ethnological and archeological works published before or soon after his decease. Thus the first scientific memoir published by the Smithsonian Institution, the highly creditable Squier and Davis's "*Ancient Monuments of the Mississippi Valley*,"¹ included five pages of text and two excellent plates on the "*Crania from the Mounds*." The main part of this report was by Morton himself. One skull only is described, but it was a very good, undeformed, or but very slightly deformed specimen, derived from an ancient mound in Scioto valley, Ohio. For comparison there are given measurements of 308 mound, "tumuli," and Indian crania² of different ages and from different parts of the North American continent and Peru. Curiously, and against the previously expressed opinion of Morton, Squier and Davis assumed in this connection that there had existed a special "race of the mounds," the skull described "belonging incontestably to an individual of that race." Regarding skeletal remains from the mounds in general, however, they well recognized that these were "of different eras," the superficial burials being comparatively late and to be ascribed to the Indian tribes in occupancy of this country at the period of its discovery.

In the same year (1848) appeared the second volume of the *Transactions of the American Ethnological Society*, which contains important ethnological contributions and maps by Hale and Gallatin in an article on the "Indians of North America." Neither of these contributions added directly to physical anthropology, but both contained valuable data on the early distribution of the North

¹ *Smithsonian Contributions to Knowledge*, I, [N. Y., 1848, pp. 288-292, pl. xlvii-xlviii.

² Mainly from Morton's *Crania Americana*.

American Indians, on the population of some of the tribes, and on their environment. There are notes on the physical appearance of the Indians of various types,¹ but these are quite imperfect. In the same volume also appears Morton's "Account of a cranio-logical collection, with remarks on the classification of some families of the human race."² This brief contribution is interesting partly because in it Morton shows in a few words how he was led to the collection and study of American crania, and partly because he reiterates his conviction as to the racial unity of all the American nations, barring the Eskimo.³

Even more important than both of the works heretofore mentioned in this section was the great encyclopedia of knowledge concerning the American Indian, prepared by a special provision of the United States Congress under the auspices of the Bureau of Indian Affairs, and published between 1851 and 1857, by Henry R. Schoolcraft in collaboration with a number of other authors.⁴ This work gave much reliable information on the geographic distribution of the Indian tribes in North America; on their migration; on the conditions of the Indian family, including birth and death; on the intellectual capacity of the Indian; and on the statistics and population of the tribes. Besides this, it included a series of articles dealing directly with the physical anthropology of the Indian. These comprised the "Essay on the physical characteristics of the Indian," by Samuel G. Morton (II, 315-330); "Admeasurements of the crania of the principal groups of Indians of the United States," by J. S. Phillips (II, 331-335); "Examination and distribution of the hair of the head of the North American

¹ Particularly in Hale, chapter Ethnology, pp. 5-8.

² Pp. 217-222.

³ P. 218: "The anatomical facts considered in conjunction with every other species of evidence to which I have had access, lead me to regard all the American nations, except the Esquimaux, as people of one great race or group. From Cape Horn to Canada, from ocean to ocean, they present a common type of physical organization, and a not less remarkable similarity of moral and mental endowments."

⁴ Complete title: *Historical and Statistical Information respecting the History, Condition and Prospects of the Indian Tribes of the United States, collected and prepared under the direction of the Bureau of Indian Affairs: per act of Congress of March 3d, 1847.* by Henry R. Schoolcraft, LL.D. 6 vols., 4°, Phila., 1851-1857.

Indian," by Peter A. Browne, LL.D. (III, 375-393); "Considerations on the distinctive characteristics of the American aboriginal tribes," by Dr Samuel Forrey (IV, 354-365); and "Unity of the human race" (373-375), "Remarks on the means of obtaining information to advance the inquiry into the physical type of the Indian" (IV, 345-353), and "The aboriginal features and physiognomy" (V, 287-292), by Schoolcraft himself.

Meanwhile also a number of publications appeared in the United States bearing on physical anthropology, which were incited not so much by Morton as by Lawrence (*Lectures on the Natural History of Man*) and especially Prichard (*Natural History of Mankind*) in England. Three volumes belonging to this category were *The Races of Man*, by Dr Charles Pickering (*Publications of the United States Exploring Expedition*, 4°, Boston, 1848); the *Natural History of Man*, by Wm. N. F. Van Amringe (8°, New York, 1848); and *The Natural History of the Human Species*, by Lieutenant Colonel Charles Hamilton Smith (8°, Boston, 1851).

These volumes, as seen in part from their titles, deal comprehensively and more or less philosophically with mankind as a whole. The two more valuable ones are those of Smith and Pickering, both presenting good summaries of contemporaneous knowledge of the subjects with which they deal. Van Amringe wrote on the basis of biblical data; nevertheless his book also contains many a good thought. The works of both Smith and Pickering were published later in new editions, the former in 1859 (Boston), with additions by Dr S. Kneeland; and the latter in 1854 (London), with *An Anatomical Synopsis of the Natural History of Man*, by Dr John Charles Hall.

The influence of these publications was more of a general nature. They were largely read, educating and influencing the public mind on a subject which was then claiming a large share of the attention of all thoughtful minds, without actually adding much to existing knowledge or stimulating intensive research.

During the latter part of the first and the early part of the second half of the 19th century there were also several other important occurrences, the results of which served to enhance interest in anthropology, particularly that of the American aborigines. These

were the numerous Government exploring expeditions to the far Northwest, West, and Southwest, under Wilkes (1838-'42), Frémont (1842-'44), Emory (1846-'47), Stansbury (1849), and others; and the extensive Pacific Railroad Surveys of 1853-'54, comprising the explorations of Parke, Whipple, Pope, Stephens, Williamson, and their companions.

V—MORTON'S SUCCESSORS—JOSEPH LEIDY AND J. AITKEN MEIGS

From what precedes it is plain that Morton may be termed justly and with pride the father of American anthropology; yet it must be noted with regret that he was a father who left many friends to the science and even followers, but no real progeny, no disciples who would continue his work as their life vocation.

The collection of racial crania which Morton assembled was purchased from his executors, for the sum of \$4,000, by forty-two gentlemen of Philadelphia and by them presented to The Academy of Natural Sciences of Philadelphia, where it rests a sad relic to the present day; the Academy, whether owing to lack of scholars or for other reasons, failed to provide for further research in connection with the precious material or for systematic accessions. What might not the Academy have been to American anthropology had circumstances been different! However, the time was doubtless not ripe.

As it was, two men were approached with a view to continuing Morton's work, either of whom would have made a thorough success of the undertaking had he been in a position to devote himself exclusively to anthropology. They were Joseph Leidy and J. Aitken Meigs. According to Leidy,¹ "after the death of Dr Morton, it was proposed to me to take up the investigation of the cranial characteristics of the human races, where he had left it, which I omitted, not from a want of interest in ethnographic science, but because other studies occupied my time. Having, as Curator of the Academy of Natural Sciences, the charge of Dr Morton's extensive cabinet of human crania, I confided the undertaking to Dr Meigs. . . ."

¹ In Nott and Gliddon's *Indigenous Races of the Earth*, 8°. Phila., 1857, p. xvi.

Dr J. Aitken Meigs, eventually professor of climatology, physiology, and the institutes of medicine in various colleges of Philadelphia and an indefatigable worker,¹ endeavored with considerable success to pick up the threads where broken by Morton's death and in the course of sixteen years (1850-1866) contributed a number of good papers on anthropology. The most important of these were "The Cranial Characteristics of the Races of Men," in Nott and Gliddon (1857), with extensive bibliography; the *Catalogue of Human Crania in the Collection of the Academy of Natural Sciences of Philadelphia* (1857), a continuation of Morton's Catalogue, which meanwhile had reached the third edition; the *Observations on the Occiput in Various Races* (1860); the *Hints to Craniographers* (1858), which includes the first comprehensive data on other cranial collections then in existence, both here and in Europe; and the *Mensuration of the Human Skull* (1861), which, besides referring to much of the earlier history of anthropometry, gives clear directions for 48 cranial measurements and determinations.

In appraising Meigs' anthropological work as a whole, it is felt with regret that he was not all to the science that he could and should have been. His writings show much knowledge of the field, minute application, and considerable erudition, but they do not go far enough; they are only excellent by-products of a mind preoccupied in other though more or less related directions. Meigs also like Morton left no disciples.

The bibliography of his anthropological contributions is as follows:

Description of a deformed, fragmentary human skull, found in an ancient quarry-cave at Jerusalem; with an attempt to determine by its configuration alone the ethnical type to which it belongs. *Proc. Acad. Nat. Sci. Phila.*, XI, 1850, pp. 262-280.

On Dr Morton's collection of human crania. *Proc. Acad. Nat. Sci. Phila.*, 1855, p. 420.

Catalogue of human crania in the collection of the Academy of Natural Sciences of Philadelphia. *Proc. Acad. Nat. Sci. Phila.*, 1856, Suppl.

¹ Born at Philadelphia, 1829, died 1879. Biography by Geo. Hamilton in *Trans. Med. Soc. Pa.*, Phila., 1880, pp. 1-22. For other biographic notices see under Meigs in *Catalogue of the Library of the Surgeon General, U. S. A.*

The cranial characteristics of the races of men. In Nott and Gliddon's *Indigenous Races of the Earth*, 8°, Phila., 1857, pp. 203-352.

Hints to craniographers—upon the importance and feasibility of establishing some uniform system by which the collection and promulgation of craniological statistics, and the exchange of duplicate crania, may be provided. 8°, pp. 1-6, Phila. 1858 (?), with *Proc. Acad. Nat. Sci. Phila.* for 1858, and separately.

Observations upon the form of the occiput in the various races of men. *Proc. Acad. Nat. Sci. Phila.*, xii, 1860, pp. 397-415.

The mensuration of the human skull. *North-Amer. Med. Chirurg. Review*, Sept., 1861, pp. 837-861.

Observations upon the cranial forms of the American aborigines, based upon specimens contained in the collection of the Academy of Natural Sciences of Phila. *Proc. Acad. Nat. Sci. Phila.*, 1866, p. 197.

Description of a human skull in the collections of the Smithsonian Institution (from Rock Bluff, Ill.), *Smithsonian Report for 1867*, pp. 412-414.

Meanwhile Dr Joseph Leidy (1823-'91), later Professor of Anatomy in the University of Pennsylvania, Curator of the Academy of Natural Sciences, and a foremost naturalist, did not wholly abandon his interest in anthropology. As will be seen from the appended bibliography, he published a number of smaller contributions of more or less direct interest to the new science, all of which bear the mark of an able and conscientious observer. Among other things those of us who are more closely interested in human antiquity owe to him one of the earliest and clearest statements regarding the unreliability of the fossilization of bone as a criterion of antiquity. His words on this point are as follows:¹ "Bones of recent animals, when introduced into later deposits, may in many cases very soon assume the condition of the fossils belonging to those deposits. Fossilization, petrification, or lapidification is no positive indication of the relative age of the organic remains. . . ."

As well known, it was Professor Leidy to whom the fossil pelvic bone of Natchez and the variously petrified human bones from the west coast of Florida were submitted for examination, which resulted in the opinion that they were not necessarily of any great antiquity, though he was inclined to believe that the native American had "witnessed the declining existence of the Mastodon and

¹ In his article on human paleontology, Nott and Gliddon's *Indigenous Races of the Earth*, 1857, p. xviii, footnote.

Megalonyx" on this continent, and that man was probably a companion in America of the latest prehistoric horse.

Among the more than five hundred published contributions to natural science by Leidy, the following are of interest to anthropology:

On the cranium of a New Hollander. *Journ. & Proc. Acad. Nat. Sci. Phila.*, 1847, p. 217.

On the hair of a Hottentot boy. *Jour. & Proc. Acad. Nat. Sci. Phila.*, 1848, p. 7.

Observations on the existence of the intermaxillary bone in the embryo of the human subject. *Proc. Acad. Nat. Sci. Phila.*, iv, 1848-1849, pp. 145-147.

On a so-called fossil man. *Proc. Acad. Nat. Sci. Phila.*, 1855, p. 340.

(On human paleontology.) In Nott and Gliddon's *Indigenous Races of the Earth*, 8^o, Phila., 1857, pp. XXI-XIX.

On an acephalous child. *Proc. Acad. Nat. Sci. Phila.*, 1858, p. 8.

On blood crystals. *Proc. Acad. Nat. Sci. Phila.*, 1858, Biol. 9.

On the cause of monstrosities. *Proc. Acad. Nat. Sci. Phila.*, 1858, Biol. 9.

On sections of the human cranium. *Proc. Acad. Nat. Sci. Phila.*, 1858, Biol. 10.

Exhibition of the lower jaw of an aged man. *Proc. Acad. Nat. Sci. Phila.*, 1870, p. 133.

On the reversed viscera of a human subject. *Proc. Acad. Nat. Sci. Phila.*, 1870, p. 134.

Anomalies of the human skull. *Proc. Acad. Nat. Sci. Phila.*, 1888, p. 273.

Notice of some fossil human bones. *Trans. Wagner Free Institute of Science, Phila.*, 1889, II, pp. 9-12.

VI—J. C. NOTT AND GEORGE R. GLIDDON

Besides J. Aitken Meigs and Joseph Leidy, there were two other men who were closely associated with Morton in his anthropological work and who subsequently endeavored to fill at least a part of the void left by his death. They were Dr J. C. Nott, of Mobile, Alabama, and Mr George R. Gliddon of Philadelphia, formerly U. S. Consul at Cairo and a large contributor to Morton's cranial collections.

Aided in the beginning by Morton himself and supplementing their work by contributions from Agassiz, Leidy, Meigs, Usher, Patterson, and others, Nott and Gliddon published in 1854 a volume on the *Types of Mankind*, which by 1871 reached the tenth edition;

and in 1857 this was followed by a volume on the *Indigenous Races of the Earth*, which also had a large circulation.

The scope of these works, which exercised considerable influence on the public mind in the field they covered, can best be appreciated from an enumeration of their main sections, which were:

“THE TYPES OF MANKIND”

Memoir of Samuel George Morton.

The natural provinces of the animal world and their relation to the different types of man, by Prof. L. Agassiz.

Geographical distribution of animals and the races of man.

Types of mankind.

Excerpts from Morton's unedited manuscripts on “The Size of the Brain in various Races and Families of Man”; and on “Origin of the Human Species.”

Geology and paleontology in connection with human origins, by W. Usher, M.D.

Hybridity of animals viewed in connection with the natural history of mankind; and comparative anatomy of races, by J. C. Nott, M.D.

“INDIGENOUS RACES OF THE EARTH”

Contribution by Leidy on “Human Paleontology”; with a letter on “Primitive Diversity of the Races of Man” and “The Reliability of Philological Evidence,” by L. Agassiz.

Distribution and classification of tongues, by Alfred Maury.

Iconographic researches on human races and their art, by Francis Pulszky.

The cranial characteristics of the races of man, by J. Arthur Meigs.

Acclimation; or the comparative influence of climate and endemic and epidemic diseases on the races of man, by J. C. Nott.

The Monogenist and the Poligenist, by George R. Gliddon.

It is to be regretted that these publications and particularly the *Types of Mankind* were strongly attached to the biblical traditions, more than three hundred pages of the later volume being devoted to efforts at harmonizing the results of the rising science with the biblical Genesis.

Another serious defect of the two works was a dearth of actual field or laboratory research. They bore on the whole the stamp of popular science rather than that of reports on scientific investigation. So they were evidently received and on that basis reached their extensive circulation. They have not advanced or benefitted physical anthropology in this country to any great extent, and are now but seldom referred to.

VII—ANTHROPOLOGY IN BOSTON—GEORGE PEABODY AND JEFFRIES WYMAN

It now becomes necessary to leave Philadelphia for a while and return to Boston. Toward the end of the first half of the last century there were living in Salem and Boston two men, George Peabody and Jeffries Wyman, who, directly or indirectly, were destined to become important factors in American anthropology. It was the former who, after extensive travels in both North and South America, and from personal appreciation of the problems awaiting archeology, ethnology, and physical anthropology on this continent, not only assisted his friend Jeffries Wyman, but established and endowed, besides other scientific foundations, the Peabody Museum of American Archaeology and Ethnology of Harvard University (1866), an institution which from the beginning has been of highly valued service to our science.

As to Jeffries Wyman, his services to American anthropology can not be passed over with only a brief notice.

Wyman was born at Chelmsford, Massachusetts, August 11, 1814. He studied at Harvard, and in 1837 graduated in medicine. Finding difficulty in securing a favorable opportunity for practice, he became Demonstrator of Anatomy at Harvard College; but his earnings were so small that to eke out his subsistence he was obliged at the same time to become a member of the Boston fire department.¹ In 1840, however, he was appointed Curator of the Lowell Institute. In 1840-1841 he delivered at the Institute his well-known course of twelve lectures on comparative anatomy and physiology, and with the money thus earned went to Europe for further studies. At Paris he devoted himself to comparative anatomy and physiology, and here in all probability he also became acquainted more directly with the beginnings of physical anthropology. In 1843 he accepted the chair of anatomy and physiology at Hampden-Sidney College, Virginia; and in 1847 he was appointed to succeed Doctor Warren as Hersey Professor of Anatomy at Harvard College.

¹ Asa Gray: *Jeffries Wyman. Memorial Meeting of the Boston Society of Nat. History. Oct. 1, 1874.* 8°, pp. 1-37. Also *Memoir of Jeffries Wyman* by A. S. Packard, *Nat. Acad. Sci.*, pub. 1878, pp. 75-126.

In 1852 Jeffries Wyman began, on the occasion of a necessary trip to the South for his health, an exploration of the shell-mounds in Florida. In 1856 he penetrated deep into Surinam, and two years later traveled extensively with George A. Peabody through Argentina, across the Andes to Chile, and back by way of Peru and Panamá. In 1866, when "failing strength demanded a respite from oral teaching," he was named by George Peabody one of the seven trustees of the newly founded Peabody Museum, at the same time becoming the first Professor of American Archeology and Ethnology at Harvard University and a curator of the museum.

Long before his connection with the Peabody Museum, Wyman began to assemble collections in comparative anatomy, including some human material; and while a curator of the museum he brought together an important collection of human crania, the foundation of the present large somatological collections of that institution.

Wyman died of pulmonary hemorrhage September 4, 1874. He left no great published works, but a large number of valuable smaller contributions, many of which relate to or deal directly with anthropology. He gave us our first precise osteological knowledge of the gorilla; he investigated most conscientiously the human crania at the Peabody Museum, and extended his studies to the bones of the limbs, pointing out for the first time the prevalence of platycnemy in the Indian; he gave an excellent description of the shell-heaps of Florida and their human skeletal remains; and was at the time of his death "undisputably the leading anthropologist of America" (Packard).

That the premature demise of Jeffries Wyman was a great loss to our branch of science will be seen from the following list of publications showing his anthropological and related activities:

Observations on the external characters, habits, and organization of the *Troglodytes niger*, Geof. Boston Jour. Nat. Hist., iv, 1843-1844, pp. 362-376, 377-386.

Notice of the external characters, habits, and osteology of *Troglodytes gorilla*, a new species of ourang from the Gaboon river. Boston Jour. Nat. Hist., v, 1845-1847, pp. 417-422; Ann. Sci. Nat., xvi (Zool.), 1851, pp. 176-182; Proc. Boston Nat. Hist. Soc., ii, 1845-1848, pp. 245-248; Amer. Jour. Sci., viii, 1849, pp. 141-142.

A new species of *Troglodytes*. Silliman's Jour., v, 1848, pp. 106-107.

A description of two additional crania of the *engé-ena* (*Troglodytes gorilla*, Savage and Wyman) from Gaboon, Africa (1849). Proc. Boston Soc. Nat. Hist., iii, 1848-51, p. 179; Amer. Jour. Sci., ix, 1850, pp. 34-45; New Phil. Journ. Edinb., XLVIII, 1850, pp. 273-286.

On the crania of Indians. Proc. Boston Soc. Nat. Hist., iv, 1851-1854, pp. 83-84.

Description of the post-mortem appearances in the case of Daniel Webster. American Jour. Med. Sci., Jan., 1853.

Dissection of a black Chimpanzee (*Troglodytes niger*). Proc. Boston Soc. Nat. Hist., v, 1854-56, pp. 274-275.

On the cancellated structure of some of the bones of the human body (1849). Jour. Boston Soc. Nat. Hist., vi, 1857, pp. 125-140.

Account of the dissection of a human foetus. Proc. Bost. Soc. Nat. Hist., Feb. 3, 1858.

Account of the collection of gorillas made by Mr Du Chaillu. Proc. Bost. Soc. Nat. Hist., Jan. 4, 1860.

On bones of a gorilla recently obtained in western equatorial Africa. Proc. Bost. Soc. Nat. Hist., Oct. 2, 1861.

Dissection of a Hottentot. Proc. Bost. Soc. Nat. Hist., April 2, 1862.

On the development of the human embryo. Proc. Bost. Soc. Nat. Hist., Dec. 3, 1862.

Observations on the cranium of a young gorilla. Proc. Boston Soc. Nat. Hist., iv, 1863, pp. 203-206.

On the skeleton of a Hottentot (1863). Proc. Bost. Soc. Nat. Hist., ix, 1865, pp. 352-357; Anthropol. Review, iii, 1865, pp. 330-335.

On malformations. Proc. Bost. Soc. Nat. Hist., Oct. 19, 1864.

On Indian mounds of the Atlantic coast. Proc. Bost. Soc. Nat. Hist., Nov. 2, 1864.

On the distorted skull of a child from the Hawaiian islands. Proc. Bost. Soc. Nat. Hist., Oct. 17, 1866.

Measurements of some human crania. Proc. Bost. Soc. Nat. Hist., Nov. 20, 1867.

On symmetry and homology in limbs (1867). Proc. Bost. Soc. Nat. Hist., xi, 1868, pp. 246-278.

Observations on crania. Proc. Bost. Soc. Nat. Hist., xi, 1868, pp. 440-462. Also Observations on crania and other parts of the skeleton. Fourth Annual Report of the Peabody Museum, 1871, pp. 10-24.

On the fresh-water shell heaps of the St. John's river, East Florida. American Naturalist, ii, 1869, pp. 393-403, 449-463.

Human remains in the shell heaps of the St. John's river, East Florida. Cannibalism. American Naturalist, viii, p. 403-414, July 1, 1874; also 7th Ann. Report of Peabody Museum, i, 1874, pp. 26-37.

Remarks on cannibalism among the American aborigines. Proc. Bost. Soc. Nat. Hist., May 20, 1874.

Fresh-water shell mounds of the St. John's river, Florida; Fourth memoir. Peabody Academy of Science, Salem, Mass., 1875, pp. 94, pl. 1-IX.

VIII—LATER HISTORY OF ANTHROPOLOGY

After Wyman, the history of physical anthropology in Boston, and later also in Worcester, Mass., is one that belongs, with two notable exceptions, to the realm of the living, headed by one of the best friends the science has ever had in this country, Prof. F. W. Putnam. The two exceptions apply to Henry P. Bowditch and Frank Russell.

Dr Henry P. Bowditch (1840-1911), Professor of Physiology in the Harvard Medical School, has left us, besides his physiological writings, a number of direct contributions to physical anthropology, some of which are of great value. The most noteworthy ones were those reporting his investigations on the growth of children. These investigations, undertaken in the early seventies under the auspices of the Health Department of the Social Science Association of Boston, were stimulated by the results of researches on Belgian children published in Quetelet's *Anthropometrie* (Brussels, 1870). Their final object was "to determine the rate of growth of the human race under the conditions which Boston presented." The results contributed much to our knowledge of the laws controlling the growth of the child, and stimulated in turn all later investigations on the subject in this country.

Other contributions of Professor Bowditch to anthropology are included in the following bibliography:

The growth of children. 8th Ann. Rep. State Bd. Health of Mass., Boston, 1877, pp. 1-51.

The growth of children. (A supplementary investigation) with suggestions in regard to methods of research. 10th Ann. Rep. State Bd. Health of Mass., Boston, 1879, pp. 35-62.

Relation between growth and disease. Trans. Am. Med. Asso., 1881, 9 pp.

The physique of women in Massachusetts. 21st Ann. Rep. State Board of Health of Mass., Boston, 1889-90; Also in Med. Pub. Harvard Med. Sch., 30 pp., 1 table.

The growth of children, studied by Galton's method of percentile grades. 22d Ann. Rep. State Bd. Health, Mass., Boston, 1891, pp. 479-522.

Are composite photographs typical pictures? McClure's Mag., N. Y., 1894, 331-342.

Frank Russell, Ph.D. (1868-1903), was unfortunately taken away too soon to be able to accomplish much for our branch of science. He was Instructor in Anthropology in Harvard University and was in charge of the anthropological laboratory of the Peabody Museum. In 1901 he also became associated temporarily with the Bureau of American Ethnology. He carried on explorations, partly anthropological and partly ethnological, among the tribes in northern Canada and among the Pima of Arizona, and published several contributions on craniological work in the laboratory. He succumbed to tuberculosis before his work could leave a lasting impress on American anthropology. Following is a list of his writings which bear more or less on our subject:

Explorations in the Far North, 8°, 290 pp., 1898 (expeditions under the auspices of the University of Iowa, 1892-3-4).

Human remains from the Trenton gravels. *Am. Naturalist*, 1899, p. 33.

Studies in cranial variation. *Am. Nat.*, 1900, pp. 737-745.

New instrument for measuring torsion. *Am. Nat.*, 1901, No. 412.

Laboratory outlines for use in somatology. *Am. Anthropologist*, v, 1901, p. 3.

Before we turn again southward, a few words are due to Canada.

In 1862 Sir Daniel Wilson (1816-1892), Professor of History and English Literature in University College, Toronto, published two volumes on *Prehistoric Man*, the second of which is devoted largely to notes and measurements, many of them original with the author, on Mound, Peruvian, Mexican, and other American crania, including a nice series (39 male, 18 female) of those of the Hurons, besides a valuable series (39 skulls) of the Eskimo. To the description of the crania is added a chapter on "Racial Cranial Distortion," and other chapters on "The Indian of the West," "Intrusive Races," and "Migrations."

Besides his *Prehistoric Man*, which reached three editions, Sir Daniel Wilson published a number of articles touching more or less directly on physical anthropology, the principal of which are:

Ethnical forms and undesigned artificial distortions of the human cranium. *Canad. Jour.*, 1862, pp. 399-446; also sep., 8°, Toronto, 48 pp., 3 pl.

Brain-weight and size in relation to relative capacity of races. *Canad. Jour.*, 1876, pp. 177-230; also sep., 8°, Toronto, 56 pp.

Anthropology, 8°, N. Y., 1885, 55 pp.

The right hand: left handedness. 12°, London and N. Y., 1891, x, 215 pp.

It is regrettable, from the scientific point of view, that most of these writings, while of considerable contemporary value, were somewhat general in nature, lacking in a measure the impress of the hand of the specially trained anatomist and anthropologist, hence they left no substantial, enduring impression on the progress of physical anthropology. The measurements on the crania, particularly, were few in number, recorded in inches, and taken with instruments regarding which there is no record, though presumably they were such as had been used by Meigs and Morton. The skulls utilized by Wilson were largely those of the Boston and Philadelphia collections in Quebec, and probably also from the collection now in the Provincial Museum at Toronto.

Proceeding southward from Boston and Toronto we find that, in New York, the old Ethnological Society had gone out of existence. A number of medical collections, including anthropological specimens, were being formed in connection with several of the hospitals and colleges, but resulted in nothing of importance to our science. The American Museum of Natural History was not established until 1869, and had not seriously begun its valuable collections or research in physical anthropology until well toward the end of the century.

West of New York, also, some collections of Indian crania were begun in the earlier part of the second half of the nineteenth century—particularly in Chicago, where there also appeared, between 1867 and 1873, a number of publications touching on the physical anthropology of the American race, by J. W. Foster, the geologist (1815-1873).¹ Unfortunately none of these publications, so far as they deal with somatology, are of great value.

In coming back to Philadelphia, we see that the old Wistar and Horner Museum (founded 1808) has been enriched by anthropological material;² and there are rising from the same medical

¹ On the Antiquity of Man in North America. *Trans. Acad. Sci.*, 1, Chicago, 1867-69, pp. 227-257. On Certain Peculiarities in the Crania of the Mound-builders, *Proc. Am. Assn. Adv. Sci.*, XXI, 1872, 227-255; *American Naturalist*, VI, 1872, 738-747. *Prehistoric Races of the United States of America*, 8°, Chicago, 1873, pp. xv, 415.

² Destined eventually to become a part of the collections of the Wistar Institute of Anatomy and Biology, incorporated in 1892.

ranks which have already given us Morton, Meigs, and Leidy in that city, two new men who, particularly in one case, were to become of considerable importance to physical anthropology. They are Dr Harrison Allen (1841-'97), and Dr Daniel G. Brinton (1837-'99).

Dr Harrison Allen was born in Philadelphia in 18—. Like Morton he was deprived, by untoward circumstances, of preliminary higher education. In a large measure self-taught, he matriculated in 1859 in the medical department of the University of Pennsylvania and was graduated in 1861. From the latter date to 1865 he served as physician or surgeon in various city and army hospitals at Philadelphia and about Washington. At the close of 1865, resigning from the army service, he returned to Philadelphia to attend on the one hand to practice, and on the other to anatomical, anthropological, and biological investigation. Soon after he was offered the position of Professor of Zoölogy and Comparative Anatomy in the Auxiliary Faculty of Medicine in the University of Pennsylvania,¹ which he held for many years. Later he was also for a time Professor of Institutes (mainly physiology) at the University; the chair of anatomy was occupied by Leidy. In 1892 he was elected President of the Association of American Anatomists, and shortly after became the first Director of the Wistar Institute.

Judging from his anthropological writings, Harrison Allen became interested in this branch of science primarily through the works of Morton and J. Aitken Meigs, the latter of whom he knew personally; in large measure, however, he also followed the more modern English craniologists.

The number of his anthropological contributions is large, as will be seen from the appended register; but in many instances it is to be regretted that the title covers merely a note on a more or less extended oral communication, the publication of which in full would have been of much interest.

Allen's three most important contributions to physical anthropology are *The Clinical Study of the Skull* (1890); *The Crania from*

¹ *Memoir of Harrison Allen, M.D.*, by Horatio C. Wood, M.D.; read April 6, 1898; 8°, Phila. 1898, pp. 1-15. This memoir, as well as the appended bibliography, are, however, defective.

the Mounds of the St. John's River, Florida (1896); and *The Study of Hawaiian Skulls* (1898; finished just before his death). These works are accompanied by excellent illustrations; the measurements and special observations are much more detailed than in any previous American work; the whole treatment of the subjects shows much erudition; and the works compare favorably with any anthropological memoirs published to that date abroad.

The *Clinical Study of the Skull* was the tenth of the Toner Lectures of the Smithsonian Institution; lectures "instituted to encourage the discovery of new truths for the advancement of medicine." It was delivered May 29th, 1889, and printed a year later. Notwithstanding its medical title, it is strictly an anthropological publication which deals with many features and anomalies of racial skulls, that had scarcely been noticed up to that time, as will be apparent from the following subdivisions of the essay: 1, the malar bone; 2, the lower jaw; 3, the norma basilaris; 4, the basi-cranial angle; 5, the posterula; 6, the nasal chambers; 7, the vertex—its sutures, eminences, depressions, general shape, etc.; and 8, sutures other than those of the vertex.

The memoir on *Crania from the Mounds of the St. John's River* calls attention for the first time to the highly deserving series of archeological explorations, with their accompanying anthropological collections, carried on to this day by Mr Clarence B. Moore. Comparative measurements and observations are given on a considerable number of other American skulls from Alaska to California. The results of several interesting new measurements are shown; and included are reports on complete and incomplete divisions of the malar bone, on various features of the condyloid process of the lower jaw, on senile absorption, and on numerous interesting morphological characteristics of the teeth.

The final larger anthropological contribution of Harrison Allen, that on Hawaiian skulls, is really a modern production, which gives valuable detailed measurements; shows a novel method of graphic representation of the numerical data and contrast of series; and, like the works previously mentioned, includes many interesting collateral observations, such as those on prenasal fossæ, the lower

jaw, the infra-orbital suture, the hard palate, the teeth and their effect on skull form, the premature closure of sutures, and various pathological conditions.

Besides the above, there are a number of articles by Harrison Allen, the true contents of which are more or less obscured, or imperfectly expressed by their titles, and which are of considerable interest to the anthropologist. They are "The Jaw of Moulin Quignon" (1867); "Localization of Diseased Action in the Osseous System" (1870); "On Certain Peculiarities in the Construction of the Orbit" (1870); "On the Methods of Study of the Crowns of the Human Teeth" (1888); and "On the Effects of Disease and Senility in the Bones and Teeth of Mammals."

Considering the excellence of Harrison Allen's contributions to anthropology and the unquestionable fact that he, after Morton, stands as the foremost American representative of our branch of science on this continent before the end of the nineteenth century, it might seem strange that his influence on the development of the science remained only moderate. The explanation of this lies doubtless in the facts that he did not devote himself exclusively to physical anthropology, but by many was regarded rather as a biologist or anatomist; that except for the few years before his death, when he held the directorship of the Wistar Institute, he was not connected in a higher capacity with any museum or institution, and made no noteworthy collections. Also he never engaged in the teaching of anthropology; and his publications in this line, while altogether of a respectable number and volume, were nevertheless, when taken individually, often far apart, disconnected, and mostly quite brief. A list of his writings follows:

[The Third Condyle in Man.] *Proc. Acad. Nat. Sci. Phila.*, 1867, p. 137.

The Jaw of Moulin Quignon. *Dental Cosmos*, ix, Phila., 1867, pp. 169-180.

On the inter-orbital space in the human skull. *Proc. Acad. Nat. Sci. Phila.*, 1869, *Biol.* 13.

Localization of diseased action in the osseous system. *Am. Jour. Med. Sci.*, 1870, pp. 401-409.

On certain peculiarities in the construction of the orbit. *Am. Jour. Med. Sci.*, N. S., LXIX, Phila., 1870, 116-119.

Life-form in art. 4°, Phila., 1875, 70 pp.

On the effect of the bipedal position in man. *Proc. Acad. Nat. Sci. Phila.*, 1875, pp. 468-469.

Autopsy of the Siamese Twins. *Trans. Coll. Physicians Phila.*, VIII, Phila., 1875, pp. 21-42.

A human skull exhibiting unusual features. *Proc. Acad. Nat. Sci. Phila.*, 1876, pp. 17-18 (Pterygo-sphenoid process).

Distinctive characters of teeth. *Proc. Acad. Nat. Sci. Phila.*, 1878, p. 39, note.

Asymmetry of the turbinated bones in man. *Proc. Acad. Nat. Sci. Phila.*, 1882, pp. 239-240.

Irregularities of the dental arch. *Proc. Acad. Nat. Sci. Phila.*, 1882, p. 310.

Asymmetry of the nasal chambers without septal deviation. *Arch. of Laryngol.*, IV, 1883, 256-257.

On the methods of study of the crowns of the human teeth, including their variations. *Dental Cosmos*, XXX, Phila., 1888, pp. 376-379.

On hyperostosis of the premaxillary portion of the nasal septum, etc. *Medical News*, LVII, Phila., 1890, pp. 183-186.

The influence exerted by the tongue on the positions of the teeth. *Proc. Acad. Nat. Sci. Phila.*, 1891, p. 451.

On the bipartite malar in the American Indian. *Proc. Asso. Am. Anatomists for 1888-1890*, Wash., 1891, p. 16.

The forms of edentulous jaws in the human subject. *Proc. Acad. Nat. Sci. Phila.*, 1893, pp. 11-13.

Congenital defects of the face. *N. Y. Med. Jour.*, LVIII, 1895, pp. 759-760.

Hyperostosis on the inner side of the human lower jaw. *Proc. Acad. Nat. Sci. Phila.*, 1894, pp. 182-183.

The changes which take place in the skull coincident with shortening of the face-axis. *Proc. Acad. Nat. Sci. Phila.*, 1894, pp. 181-182.

Pithecanthropus erectus. *Science*, N. S., I, 1895, pp. 239-240, 299.

The classification of skulls. *Science*, N. S., I, 1895, p. 381.

Demonstration of skulls showing the effects of cretinism on the shape of the nasal chambers. *N. Y. Med. Jour.*, LXI, 1895, pp. 139-140.

Note on a uniform plan of describing the human skull. *Proc. Asso. Am. Anat.*, 8th session, 1895, pp. 65-68; also in *Proc. Acad. Nat. Sci. Phila.*, 1896, pp. 170-174.

On the effects of disease and senility as illustrated in the bones and teeth of mammals. *Science*, N. S., V, 1897, pp. 289-294. German translation in *Rundschau*.

Study of skulls from the Hawaiian islands. With an introduction by D. G. Brinton. *Wagner Institute. Proc. Acad. Nat. Sci. Phila.*, V, pp. 1-55, 12 plates, 1898.

The second student mentioned at the beginning of this section was Daniel G. Brinton. Of widely different personality from that

of Harrison Allen, his services to physical anthropology were also of quite a different character.

Doctor Brinton was graduated from Yale; he received his medical degree in 1860 at the Jefferson Medical College in Philadelphia, and had traveled in Europe. He served through the Civil War in his medical capacity, but toward the end of 1865 he returned to West Chester, thence to Philadelphia, where he practised medicine and became editor of *The Medical and Surgical Reporter*, which position he held until 1887.¹ Eventually he became Professor of Ethnology and Archeology in The Academy of Natural Sciences of Philadelphia, Professor of American Linguistics and Archeology in the University of Pennsylvania, and Curator of the American Philosophical Society collections.

Brinton's interest in anthropology dated probably from his childhood, and extended to all branches of the science, including somatology. Like Harrison Allen, he came but little in direct contact with the American tribes, in whom nevertheless all his interests centered; but unlike Allen he was much more a student than a laboratory man or a practical anatomist. Allen and Brinton associated, however, as friends, and each doubtless exercised an influence on the other's thought and scientific production.

Among the numerous publications of Brinton relating to anthropological subjects, more than thirty are of more or less direct interest to physical anthropology (see appended bibliography). Of these the large majority are of a documentary or general nature, the more noteworthy being *The Floridian Peninsula* (1859); *The Mound-builders* (1881); *Races and Peoples* (1890); and *The American Race* (1891). Among his special articles, those deserving more particular notice, are that on "Anthropology, as a Science and as a Branch of University Education in the United States" (1892); "On Certain Indian Skulls from Burial Mounds in Missouri" (1892); "On the Variations of the Human Skeleton and other Causes" (1894); "On the Aims of Anthropology" (1895); and "On the Factors of Heredity and Environment" (1898).

¹ For further details see *Report of the Brinton Memorial meeting*, 8^o, Phila., 1900, pp. 67.

In glancing over these publications the student of physical anthropology will find many useful data and much that is helpful; but here and there he will also come across a bowlder in the path which it will be necessary to remove and the traces of which in some cases will long be perceptible. Among the most helpful were Brinton's articles on the mound-builders, counteracting the old prevalent opinion that there had existed a separate mound-builder race distinct from the rest of the Indians. Among his opinions which it would be hard to accept today were that the Eskimo extended far to the south of their present eastern abode; the probability of the derivation of the American race at the close of the last glacial epoch from Europe; and his correspondingly antagonistic attitude toward the theory of Asiatic derivation of the Indians.

Doctor Brinton excelled as a critic and in discussion; and notwithstanding a lack of sufficient specialization in physical anthropology, his activities exercised a favorable influence on the progress of the science in common with other branches of anthropology. Dr Brinton's bibliography relating more or less to somatology follows:

The Floridian peninsula, its literary history, Indian tribes and antiquities. 8°, pp. 202, Philadelphia, 1859.

The Shawnees and their migrations. *Historical Magazine*, x, pp. 1-4, Jan., 1866 (Morrisania, New York).

The Mound-builders of the Mississippi valley. *Historical Magazine*, xi, pp. 33-37, Feb., 1866.

The probable nationality of the mound-builders. *American Antiquarian*, iv, pp. 9-18, Oct., 1881.

Anthropology and ethnology. pp. 184. *Iconographic Encyclopedia*, i, pp. 1-184, Phila., 1886.

A review of the data for the study of the prehistoric chronology of America. Pp. 21. *Proc. Amer. Assoc. for the Advancement of Science*, 1887.

On an ancient human footprint from Nicaragua. *Proc. Amer. Philos. Soc.*, xxiv, pp. 437-444, Nov., 1887.

On a limonite human vertebra from Florida. *Proc. Amer. Assoc. Adv. Sci.*, 1888.

On the alleged Mongoloid affinities of the American race. *Proc. Amer. Asso. Adv. Sci.*, xxvii, p. 325, 1888.

The cradle of the Semites. A paper read before the Philadelphia Oriental Club. Pp. 26. Phila., 1890.

Races and peoples; Lectures on the science of ethnography. 12^e, N.Y., 1890, 313 pp., 5 maps.

Essays of an Americanist. I, Ethnologic and Archaeologic. Illus., 8^e, Phila., 1890.

Folk-lore of the bones. Jour. Amer. Folk-lore, III, pp. 17-22, Jan. 1890.

The American race: A linguistic classification and the ethnographic description of the native tribes of North and South America. Pp. 392. New York, 1891.

Current notes on anthropology. Science, New York, 1892.

Anthropology as a science and as a branch of university education in the United States. Pp. 15. Phila., 1892.

The nomenclature and teaching of anthropology. American Anthropologist, v, pp. 263-271, July, 1892.

Remarks on certain Indian skulls from burial mounds in Missouri, Illinois and Wisconsin. Trans. of the Coll. of Physicians, Phila., third series, XIV, pp. 217-219, Nov., 1892.

European origin of the white race. Science, XIX, p. 360, June, 1892.

Proposed classification and international nomenclature of the anthropologic sciences. Proc. Amer. Assoc. Adv. Sci., XLI, pp. 257-258, 1892.

The African race in America. Chambers' Cyclopaedia, new edition, VII, London and Phila., 1893, pp. 428-430. Article "Negroes."

The beginnings of man and the age of the race. The Forum, XVI, pp. 452-458, December, 1893.

Variations of the human skeleton and their causes. Amer. Anthropologist, VII, pp. 377-386, Oct., 1894.

On various supposed relations between the American and Asian races. Memoirs of the International Congress of Anthropology, Chicago, 1894, pp. 145-151.

The "nation" as an element in anthropology. Memoirs of the International Congress of Anthropology, Chicago, 1894, pp. 19-34.

The aims of anthropology. Proc. Amer. Assoc. Adv. Sci., XLIV, pp. 1-17, 1895.

Left-handedness in North American aboriginal art. Amer. Anthropologist, IX, pp. 175-181, May, 1896.

The relations of race and culture to degenerations of the reproductive organs and functions in women. Medical News, N. Y., Jan. 18, 1896, pp. 68-69.

On the remains of foreigners discovered in Egypt by Mr. Flinders Petrie, 1895. Proc. Amer. Philosophical Soc., XXXV, pp. 63-64, Jan., 1896.

Dr Allen's contributions to anthropology. Proc. Acad. Nat. Sci. Phila., December, 1897, pp. 522-529.

The factors of heredity and environment in man. Amer. Anthropologist, XI, pp. 271-277, September, 1898.

The dwari tribe of the upper Amazon. Amer. Anthropologist, XI, pp. 277-279, Sept., 1898.

The Peoples of the Philippines. Amer. Anthropologist, XI, pp. 293-307, Oct., 1898.

IX—HISTORY OF ANTHROPOLOGY IN WASHINGTON

Again leaving Philadelphia, further tracing of the earlier history of physical anthropology in the English speaking countries of this continent leads us to Washington and to the various Government exploring expeditions, to certain corporate bodies associated with the United States Government, and finally to Government institutions proper.

The earliest event of importance to physical anthropology in Washington of which any records exist, was the gathering of Indian and other crania made by the United States Exploring Expedition of 1838-1842. No concrete record seems to exist showing exactly what this collection comprised. It was deposited with the National Institute (1840-1862), a society with a strong Government affiliation. In 1841 this society was granted the use of quarters in the Patent Office building for its collections, and those of the Government were confined to its care; and in these, we are told, natural history and ethnology predominated.¹ According to a catalogue of the collections of the National Institute, by Alfred Hunter (second edition, 1855), the anthropological material in the Institute at that time comprised an "Ancient skull"; "A very superior collection of human crania, many of them collected by the United States Exploring Expedition from the Pacific Islands"; "A skull from the Columbia river"; "Skull of a Chenook Chief"; four skulls "from an ancient cemetery"; a "Mummy from Oregon"; "Two tattooed heads from Fiji"; "Peruvian mummies"; "Two Egyptian mummies"; "The skull and paws of a chimpanzee"; and numerous busts in plaster of distinguished persons. These collections remained in the Patent Office in part until 1858 and in part until 1862, when they were transferred to the Smithsonian Institution.

The Smithsonian Institution was established in 1846, under the terms of the will of James Smithson, who bequeathed his fortune in 1826 to the United States for the "increase and diffusion of knowledge among men."² From the income of the fund the present

¹ See Richard Rathbun: *The National Gallery of Art. Bull.* 70, *U. S. National Museum*, Wash., 1909, p. 25 et seq.

² *The Smithsonian Institution, at Washington, etc.*, Washington, 1907; also, *The Smithsonian Institution; documents relative to its origin and history*, by Wm. J. Rhoes, Washington, 1870, pp. 1027.

Smithsonian building was erected on land given by the United States, and on its completion in 1858 a large part of the collections assembled under the auspices of the Government up to that time were assigned to the custody of the Institution. The National Institute passed out of existence in 1862.

In 1863 the Smithsonian Institution collections were partly destroyed by fire,¹ but the anthropological part fortunately escaped.

In 1866 another establishment was founded in Washington which was destined to render a great service to physical anthropology. This was the Army Medical Museum. Almost from the first close relations were established with the Smithsonian Institution, involving exchange of specimens; and on January 16, 1869, a formal arrangement was entered into between Secretary Henry, for the Smithsonian Institution, and Dr George A. Otis, curator of the Army Medical Museum, for the transfer thenceforth from that Museum to the Smithsonian Institution of all ethnological and archeological articles that were then in the Medical Museum or might be received in the future, in return for which the Museum received and was to receive thenceforth all human skeletal material. The actual number of crania then transferred does not appear in the records, but the collection must already have been of some importance; and in the following years hundreds of specimens of similar nature were received by the Museum from the Smithsonian. In addition, letters and circulars were sent out by Doctor Otis to Army and Navy surgeons as well as to other persons, and through this medium the Army Medical Museum anthropological collections grew until, in 1873, they included approximately sixteen hundred crania of American aborigines and other races.²

About 1870, or shortly after, a series of measurements were undertaken on the crania in the Army Medical Museum collection under Doctor Otis's direction; and in 1876 and again in 1880 a "Check-List" was published by Doctor Otis, the later edition including records on more than two thousand human crania and skeletons

¹ See *Annual Report of the Smithsonian Institution*, 1864, p. 117, et seq.

² A detailed account of the services of the Army Medical Museum to American anthropology is being prepared by Dr D. S. Lamb of the Museum.

from many parts of the world. Unfortunately the majority of the measurements were made by an unscientific employee and with instruments less perfect than those now in anthropometric use, with the consequence that many of the determinations have since been found by remeasurement of the specimens to be more or less inaccurate, and the catalogue on that account can not be used with any degree of confidence.

After Doctor Otis's death in 1881 the anthropological studies suffered a temporary set-back, but were stimulated again in 1884 when Dr J. S. Billings, U. S. Army, became Curator of the Museum. As a result of Doctor Billings' interest in anthropological work it was taken up by another United States army surgeon, namely Dr Washington Matthews.

Before this, however, two important publications of much direct interest to physical anthropology were made possible by investigations conducted in connection with the United States Army and were published in New York and Washington. The first was Dr B. A. Gould's, *The Military and Anthropological Statistics of the War of the Rebellion*, 8°, New York, 1865; the second was *Statistics, Medical and Anthropological, of the Provost-marshal-general's Bureau*, two volumes, 4°, 1875.

Both of these works deal with statistical data and observations obtained on Northern recruits during the Civil War, and represent the first efforts of note on this continent in anthropology of the living, the records extending to many thousands of subjects. The data were secured by medical examiners and other physicians. Unfortunately the work was carried out under unfavorable circumstances, and by men many of whom had no previous knowledge of these matters and who received no instruction except by circulars. The records in consequence, while interesting, can not be regarded as sufficiently reliable for the present demands of anthropology. In a number of instances, as in the reports on certain physiological observations on the "Indians" enlisted in the army, the results, in view of our subsequent information on these subjects, are so inaccurate as to be quite useless.

Dr Washington Matthews (1843-1905), to whom we may now

return, while known to science mainly for his contributions to Hidatsa and Navaho ethnology, was nevertheless interested considerably and directly in physical anthropology. In the Army Medical Museum, and in part with Doctor Billings, he carried on and published the results of investigations on the measurement of the cranial capacity, on composite photography and appliances for the same, on several modifications of anthropometric instruments, and on anatomical and anthropological characteristics of Indian crania, particularly those of the ancient Pueblos collected by the Hemenway Expedition.

The Hemenway Expedition was fitted out in 1886 under the direction of Frank Hamilton Cushing, with funds supplied by Mrs Mary Hemenway of Boston, for exploring certain ruins of the Gila drainage in Arizona. While the work was fairly under way, Dr J. L. Wortman, at that time the anatomist of the Army Medical Museum, visited the excavations in the Salt River valley at the instance of Mr Cushing and Dr Matthews, and obtained a large collection of the fragile skeletal remains of the ancient Pueblos, which was forwarded to the Museum. Here they were eventually studied by Matthews and Wortman and the results were published in a quarto memoir¹ which forms a contribution of lasting value to physical anthropology and a worthy companion to Allen's *Crania of the St. John's River*.

Doctor Matthews, a personal friend of the writer, was interested in physical anthropology to the close of his life; but advancing illness obliged him for several years before his death to abandon active work in that direction. Shortly before his death he was partly instrumental in the final stage of retransfer of the anthropological collections from the Army Medical Museum to the Smithsonian Institution; and he left hundreds of drawings and records on parts of these collections. Doctor Matthews' contributions to physical anthropology were as follows:²

¹ The human bones of the Hemenway collection in the U. S. Army Medical Museum at Washington, by Dr Washington Matthews, surgeon U. S. Army; "with observations on the Hyoid bones of this collection, by Dr J. L. Wortman. *Seventh Memoir of the National Academy of Sciences*, Washington, 1891, pp. 141-286, plates 1-59.

² For other publications and a biographical sketch, see Mooney, J., in *American Anthropologist*, N. S., VII, no. 3, 1905; pp. 514-523.

The curvature of the skull. *Trans. Anthr. Soc. Wash.*, III, pp. 171-172, Wash., 1885.

On composite photography as applied to craniology, by J. S. Billings; and on measuring the cubic capacity of skulls, by Washington Matthews. Read April 22, 1885. *Mem. Nat. Acad. Sci.*, III, pt. 2, 13th mem., pp. 103-116, 19 pl., Wash., 1886.

On a new craniophore for use in making composite photographs of skulls, by John S. Billings and Washington Matthews. Read Nov. 12, 1885. *Mem. Nat. Acad. Sci.*, III, pt. 2, 14th mem., pp. 117-119, 4 pl., Wash., 1886.

Apparatus for tracing orthogonal projections of the skull in the U. S. Army Medical Museum. *J. Anat. and Physiol.*, XXI, pp. 43-45, 1 pl., Edinb., 1886.

An apparatus for determining the angle of torsion of the humerus. *J. Anat. and Physiol.*, XXI, p. 43-45, 1 pl., Edinb., 1886.

The study of consumption among the Indians. *N. Y. Med. Jour.*, July 30, 1887.

A further contribution to the study of consumption among the Indians. *Trans. Am. Climatol. Assoc.*, Washington meeting, Sept. 18-20, 1888, p. 136-155, Phila., 1888.

The Inca bone and kindred formations among the ancient Arizonians. *Am. Anthropologist*, II, pp. 337-345, Wash., Oct., 1889.

Human bones of the Hemenway collection in the U. S. Army Medical Museum. *Mem. Nat. Acad. Sci.*, VI, 7th mem., pp. 139-286, 57 pl., Wash., 1893.

Use of rubber bags in gauging cranial capacity. *Am. Anthropologist*, XI, pp. 171-176, Wash., June, 1898.

We may now return to the Smithsonian Institution. While conditions during a larger part of the second half of the 19th century were not propitious for active participation by the Institution in anthropological research, nevertheless its publications, as will be seen from the bibliography, included many anthropological contributions by writers both foreign and American.

In 1872 Professor Otis T. Mason became connected with the Institution as collaborator in ethnology.

In 1879, the collections of the Institution increasing, Congress authorized the erection of a separate building for the National Museum, which was completed in 1881. In 1884 Professor Mason became curator of the Department of Ethnology in the Museum, and for almost a quarter of a century he was active in this position with abundant results.¹

¹ See Otis Tufton Mason, by Walter Hough, *American Anthropologist*, x, 1908, pp. 661-667.

While above all an ethnologist (in the American sense of the word), and while from a deep religious sentiment rather averse to the doctrine of man's evolution, Professor Mason was nevertheless one of the warmest friends of physical anthropology; and his helpful hand was in no small measure responsible for the subsequent auspicious development of the Division of Physical Anthropology in the U. S. National Museum.

Furthermore, somatology benefitted also directly from Professor Mason's scientific contributions. After Squier¹ and Fletcher,² he described one of the earliest known examples of Peruvian trephining;³ he had printed for distribution the best contemporaneous classification of the human races; and several of his papers,⁴ with his very useful annual contribution to anthropological bibliography, were of real service to our science. He was one of the founders (1879) and for a long time one of the most active members of the Anthropological Society of Washington; and his beneficial, stimulating effect on all branches of anthropology was felt at many a meeting of Section H of the American Association.

Among other friends of anthropology in connection with the Smithsonian Institution, now deceased, it is necessary to mention Dr J. M. Toner and Thomas Wilson.

By the generous endowment of Doctor Toner there were delivered under the auspices of the Institution, between 1873 and 1889, a series of lectures on medical and related topics which included two of special interest to physical anthropology, namely, "The Dual Character of the Brain," by Dr C. E. Brown-Séquard;⁵

¹ Squier, *Peru*, N. Y., 1877.

² Fletcher, On prehistoric trephining and cranial amulets, *Contributions to N. A. Ethnology*, vol. VI.

³ The Chacacayo trephined skull; with measurements by Dr Irwin C. Rosse, U. S. A., *Proc. U. S. National Museum*, 1885, pp. 410-412, pl. 22, and list of measurements (appended).

⁴ *What is Anthropology?* A Saturday lecture delivered in the U. S. National Museum, March, 1882, 21 pp. The scope and value of anthropological studies. *Proc. A. A. A. S.*, 1884, 365-383. The relation of the mound builders to the historic Indians. *Science*, 1884, III, 658-659. Indians in the U. S., June 30, 1886, *Rep. U. S. Nat. Mus.*, 1885, 902-907. Migration and the food quest: A study in the peopling of America, *Smithsonian Rep.*, 1894, 523-539, map.

⁵ Delivered Apr. 22, 1874, published in *Smithsonian Misc. Coll.*, Jan., 1877.

and "The Clinical Study of the Skull," by Dr Harrison Allen.¹ Doctor Toner was also one of the founders of the Anthropological Society of Washington.

Thomas Wilson (1832-1902), previously for several years United States Consul to Ghent, Nantes, and Nice, became attached to the National Museum in 1887 as curator of the Division of Prehistoric Anthropology.² While abroad, and particularly in France, he became deeply interested in archeological matters and especially in the remains of early man, subjects which occupied his attention throughout the period of his connection with the Museum. Collaterally he was, however, interested in physical anthropology, and a number of his papers deal with matters relating to that science. It is to be regretted that they were not specific enough to be of lasting value.

His publications of interest to physical anthropology are: "A study of prehistoric anthropology" (*Annual Report U. S. National Museum*, 1888); "Man in North America during the Paleolithic period" (*ibid.*); "Anthropology at the Paris Exposition" (*ibid.*, 1890); and "The Antiquity of the red race in America" (*ibid.*, 1895).

By 1897 the collections of the United States National Museum had grown to such an extent that a new plan of organization of its departments became necessary. By this plan three large departments were established—Anthropology (in the broader sense of the term), Biology, and Geology, and Professor W. H. Holmes was appointed head curator of the Department of Anthropology, which was subdivided into eight sections.³ Prof. O. T. Mason remained as curator of ethnology, later serving for several years as acting head curator.

It was Prof. W. H. Holmes, fortunately still living and in full vigor, who conceived the need of and eventually succeeded in adding to his department the Division of Physical Anthropology, the first regular division devoted entirely to this branch of science on this

¹ See Allen's bibliography, page 536 of this article.

² See In Memoriam: Thomas Wilson, by O. T. Mason, *American Anthropologist*, iv, April-June, 1902.

³ See *Report U. S. National Museum for 1897*, Washington, 1899, p. 6, et seq.

continent. With this end in view and at Professor Holmes' suggestion, an arrangement was made with the Army Medical Museum whereby a larger part of the normal somatological material in that institution (approximately two thousand crania) was transferred to the National Museum in 1898-1899. The division came into actual existence in 1902, in charge of the writer; in 1904 another highly valuable instalment of anthropological material (approximately fifteen hundred crania and skeletons) was transferred to the division from the Army Medical Museum, the latter retaining only specimens of pathological or surgical interest; and subsequently, by coöperation with other institutions and through the help of many friends of the Smithsonian, as well as through field exploration and laboratory work, the collections have increased until today they consist of more than 11,000 racial crania and skeletons, 1,600 human and animal brains, and thousands of photographs, casts, and other objects relating to physical anthropology.

In touching on the development of the Division of Physical Anthropology in the National Museum we have passed by a collateral event of much importance, namely, the establishment, in connection with the Smithsonian Institution, of the Bureau of American Ethnology.

In 1879 the Bureau of American Ethnology was definitely organized and placed by Congress under the supervision of the Smithsonian Institution.¹ Several years before this, however, Major Powell, as Director of the Geographical and Geological Survey of the Rocky Mountain Region, began the publication of a series of important volumes called *Contributions to North American Ethnology*, and it was the preparation of these which may really be looked upon as the beginning of the Bureau's existence. Major Powell himself had accomplished important work among the tribes of the Rio Colorado drainage in connection with his geological and geographical researches, and he logically became the first director of the Bureau when separately established.

The Bureau of American Ethnology has not directly occupied

¹ *Handbook of American Indians North of Mexico*, Washington, 1912, I, (4th impression), p. 171 et seq.

itself with somatology; but from the beginning of the important explorations carried on under its auspices the collection of skeletal remains of the American Indians was encouraged, and an important part of the present collections in physical anthropology in the U. S. National Museum proceeded from such field work. Besides this the publications of the Bureau were from the first open to our branch of science, with the result that at this time they contain a respectable number of more or less direct contributions to the subject, and physical anthropology in this country derived much encouragement from this most deserving institution.

Among the members of the Bureau, not now living, several deserve special mention for their services to our branch of science. These are J. C. Pilling, whose bibliographies are of assistance; Dr W. J. Hoffman, who was interested directly in somatology, reporting, among other writings, on "The Chaco Cranium"¹ and on the Menomini Indians;² Cyrus Thomas, who during his exploration of the mounds collected many crania now part of our collections; and W J McGee, who contributed to our knowledge of the Sioux and Seri Indians, and gave us, with Muñiz, a fine memoir on Primitive Trephining in Peru.³

Papers published by the Smithsonian Institution and its branches relating more or less directly to physical anthropology, and excluding those of living authors, are the following:⁴

- 1851. Culbertson, T. A. Indian tribes of the upper Missouri. S.R., v.
- 1852. Stanley, J. M. Catalogue of portraits of North American Indians, and sketches of scenery, etc. S.R., vi.
- 1855. Letterman, J. Sketch of the Navajo Indians. S.R., x.
- 1856. Haven, Samuel F. Archeology of the U. S., or Sketches, Historical and

¹ *Tenth Ann. Report of the U. S. Geol. and Geogr. Survey, of the Terr. for 1876*, Wash., 1878, pp. 453-457. 2 pl.

² *Fourteenth Ann. Report Bureau Amer. Ethnology*.

³ *The Seri Indians, 17th Ann. Rep. B. A. E.* With M. A. Muñiz, *Primitive Trephining in Peru, 16th Ann. Report B. A. E.*

⁴ Abbreviations: S. R., Annual Report of the Smithsonian Institution; S. C., Smithsonian Contributions to Knowledge; S. M., Smithsonian Miscellaneous Collections; P. N. M., Proceedings United States National Museum; B. N. M., Bulletin United States National Museum; R. N. M., Annual Report United States National Museum; C. E., Contributions to North American Ethnology; R. B. E., Annual Report Bureau American Ethnology; B. B. E., Bulletin Bureau American Ethnology.

- Bibliographical, of the Progress of information and opinion respecting vestiges of antiquity in the United States. S.R., VIII.
1859. Retzius, A. Present state of ethnology in relation to the form of the human skull. S.R.
1860. Morgan, Lewis H. Circular in reference to the degrees of relationship among different nations. S.M., II.
1861. Morgan, L. H. Suggestions relative to an ethnological map of North America.
1862. Stanley, J. M. Catalogue of portraits of North American Indians. S.M., II.
1862. Reid, A. Skulls and mummy from Patagonia. S.R.
1862. Gibbs, G. Ethnological map of the United States. S.R.
1862. Wilson, D. Lectures on physical ethnology. S.R.
1862. Morlot, A. Lecture on the study of high antiquity. S.R.
1862. Quatrefages, A. de. Memoir of Isidore Geoffrey St. Hilaire. S.R.
1862. Reid, A. Human remains from Patagonia. S.R.
1864. Buegert, Jacob. Aboriginal inhabitants of the California peninsula. S.R.
1864. Dean, John. The gray substance of the medulla oblongata and trapezium. S.C., XVI.
1864. Troyon, Fred. On the crania helvetica. S.R.
1864. Gibbs, G. The intermixture of races. S.R.
1864. Morlot, A. The study of high antiquity in Europe. S.R.
1865. Petitot, E. Account of the Indians of British America. S.R.
1866. Gibbs, G. Notes on the Tinnah or Chepewyan Indians of British and Russian America. S.R.
1866. Von Hellwald, F. The American migration; with notes by Prof. Henry. S.R.
1866. Scherzer, Schwarz. Table of anthropological measurements. S.R.
1867. Darwin, C. Queries about expression for anthropological inquiry. S.R.
1867. Pettigrew, J. B. Man as the contemporary of the mammoth and reindeer in middle Europe. S.R.
1867. Meigs, J. A. Description of a human skull from Rock Bluff, Ill. S.R.
1867. Smart, C. Notes on the Tonto Apaches. S.R.
1867. List of photographic portraits of North American Indians in the gallery of the Smithsonian Institution. S.M., XIV.
1868. Broca, P. History of the transactions of the Anthropological Society of Paris, from 1865 to 1867. S.R.
1870. Swan, James G. The Indians of Cape Flattery. S.C. XVI.
1870. Gardner, W. H. Ethnology of the Indians of the valley of the Red River of the North. S.R.
1870. Blyden, E. D. On mixed races in Liberia. S.R.
1871. Grossmann, F. E. Pima Indians of Arizona. S.R.
1872. Broca, P. The troglodytes, or cave dwellers, of the valley of the Vézère. S.R.

1873. Mailly, E. Estimate of the population of the world. S.R.
1873. Gillman, H. The mound-builders and platycnemism in Michigan. S.R.
1874. Mailly, E. Eulogy on Quetelet. S.R.
1874. Schumacher, P. Ancient graves and shell-heaps of California. S.R.
1874. Farquharson, R. J. A study of skulls and long bones, from mounds near Albany, Ill. S.R.
1874. Tiffany, A. S. The shell-bed skull. S.R.
1876. De Candolle, A. Probable future of the human race. S.R.
1876. Gillman, H. Characteristics pertaining to ancient man in Michigan. S.R.
1876. Swan, J. G. Haidah Indians of Queen Charlotte's islands, British Columbia. S.C., XXI.
1876. Brackett, A. G. The Sioux or Dakota Indians. S.R.
1876. Jones, Joseph. Explorations of the aboriginal remains of Tennessee. S.C., XXII.
1877. Galt, F. L. The Indians of Peru. S.C.
1877. Gibbs, George. Tribes of western Washington and northwestern Oregon. C.E., I.
1877. Dall, W. H. Tribes of the extreme Northwest. C.E., I.
1877. Brown-Séquard, C. E. Dual character of the brain. S.M., XV.
1878. Hart, J. N. de. The mounds and osteology of the mound builders of Wisconsin. S.R.
1878. Dall, W. H. On the remains of later pre-historic man. S.C., XXII.
1879. Pratt, R. H. Catalogue of casts taken by Clark Mills, Esq., of the heads of sixty-four Indian prisoners of various western tribes, and held at Fort Marion, St. Augustine, Fla., I.
1879. Havard, V. The French half breeds of the Northwest. S.R.
1880. Mason, Otis T. Record of recent progress in science. Anthropology. S.R.
1881. Powell, J. W. On limitations to the use of some anthropologic data. R.B.E., I.
1881. Mason, Otis T. Anthropological investigations.
1881. Index to anthropological articles in publications of the Smithsonian Institution. George H. Boehmer.
1881. Mason, O. T. Anthropology. (Bibliography of anthropology; abstracts of anthropological correspondence.) S.R.
1882. Fletcher, R. Prehistoric trephining and cranial amulets. C.E., V.
1882. Rau, Charles. Articles on anthropological subjects contributed to the Annual Reports of the Smithsonian Institution from 1863 to 1877, pp. 180.
1885. Donaldson, Thomas. The George Catlin Gallery in the U. S. National Museum, with memoirs and statistics. R.N.M., I.
1886. Mason, Otis T. The Chacacayo trephined skull. R.N.M.
1887. Thomas, C. Burial mounds of the northern sections of the United States. R.B.E., V.

1887. Porter, J. H. Notes on the artificial deformation of children among savages and civilized peoples. S.R.; R.N.M.
1887. MacCauley, Clay. The Seminole Indians of Florida. R.B.E., v.
1888. Results of an inquiry as to the existence of man in North America during the paleolithic period of the Stone Age. R.N.M.
1888. Niblack, Albert P. The coast Indians of southern Alaska and northern British Columbia. R.N.M.
1888. Wilson, Thomas. A study of prehistoric anthropology: Handbook for beginners. R.N.M.
1890. Evans, John. Antiquity of man. S.R.
1890. Hitchcock, Romy. The Ainos of Yezo, Japan. R.N.M.
1890. Wilson, Thomas. Criminal anthropology. S.R.
1890. Hitchcock, Romy. The ancient pit-dwellers of Yezo. R.N.M.
1890. Wilson, Thomas. Anthropology at the Paris Exposition in 1889. R.N.M.
1890. Romanes, George J. Weismann's theory of heredity. S.R.
1891. Thomas, Cyrus. Catalogue of prehistoric works east of the Rocky Mountains. B.B.E., 12.
1893. Rockhill, William Woodville. Notes on the ethnology of Tibet.
1895. Wilson, Thomas. The antiquity of the red race in America. R.N.M.
1895. Hamy, E. T. The yellow races. S.R.
1896. Hoffman, Walter James. The Menomini Indians. R.B.E., xiv.
1897. McGee, W. J. The Siouan Indians. R.B.E., xv.
1897. Muñiz, M. A., and McGee, W. J. Primitive trephining in Peru. R.B.E., xvi.
1898. McGee, W. J. The Seri Indians. R.B.E., xvii.
1898. Haeckel, Ernst. On our present knowledge of the origin of man. S.R.
1902. Gaudry, Albert. The Baoussé-Roussé explorations: Study of a new human type, by M. Verneau. S.R.

X—CONCLUSION

The preceding notes close a rapid and doubtless imperfect survey of the history of physical anthropology among the English-speaking people of northern America, so far as connected with those no longer living. Interdigitating closely with the more recent chapters of this history is the unfinished, richer, and more organized portion which rests in the hands of those who are still active.

Looking backward into this history, we see on the whole very creditable, though more or less sporadic and irregular, beginnings, and an irregular, often defective, course, yet not without lasting results. The more recent period belongs only to the development proper of the branch—development now based on great and accur-

ately identified collections, nourished by advancing systematic training and regulation of methods, definitely conscious of the immense and complex field of research ahead, and confident that in coöperation with closely allied branches of science physical anthropology is destined to serve worthily these countries and humanity in general.

The influences on and direct participation in American anthropology of various scientific societies and journals, and of foreign men of science, have been mentioned only casually and must be left for a future paper. Suffice it to say here that the foremost among our societies whose activities favored the advance of physical anthropology were the Anthropological Society of Washington (1879-); the American Ethnological Society of New York (1842-; 1899-); the Boston Society of Natural History (1830-); the American Association for the Advancement of Science, Section *H* (1882-); and the American Anthropological Association (1902-). Among journals especial credit is due to the *American Naturalist* (1867-); to *Science* (1880-), and above all to the *American Anthropologist* (1888-), besides which there are the periodical publications of the Smithsonian Institution and its branches, the Reports of the Commissioner of Indian Affairs, the publications of the Peabody Museum of American Archaeology and Ethnology, and those of The Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, and other institutions, which include numerous contributions to physical anthropology. As to foreign men of science who have most influenced the progress of our science in America, the list includes Blumenbach, Gall, Prichard, Lawrence, Anders Retzius, Broca, Quatrefages, Hamy, Topinard, Barnard Davis, Flower, Kollmann, E. Schmidt, and Rudolph Virchow. Finally, there are also a number of additional American names connected with isolated publications or noteworthy collections pertaining to physical anthropology, which will deserve a more extended reference in some future publication on this subject. They include men like Emil Bessels, known for his contributions on Eskimo crania¹ and

¹ Einige Worte über die Inuit (Eskimo) des Smith-Sundes, nebst Bemerkungen über Inuit-Schädel. *Archiv für Anthropologie*, VIII, 1875-1876, pp. 107-122.

"The Human Remains found among the Ancient Ruins of South-western Colorado and Northern New Mexico";¹ H. Gillman, who wrote on crania and platycnemism in Michigan;² Dr George W. Peckham, to whom we owe a contribution on "The Growth of Children" of Milwaukee;³ David Boyle who in the "Archaeological Reports" of the Province of Ontario reported on Indian crania; Cordelia A. Studley, who wrote on "Human Remains from the Caves of Coahuila, Mexico";⁴ Paul Schumacher, to whom we owe the large collections of California crania now in the Peabody Museum at Cambridge and the U. S. National Museum; and Ad. F. Bandelier, who collected a large amount of skeletal material in Bolivia for the American Museum of Natural History.

Writings on physical anthropology in Mexico and the countries to the south, if we exclude those of the living, are very meager. Lund's contributions in Brazil and Ameghino's in Argentina have been dealt with in another place.⁵ In Peru a collection of crania had been made by Raimondi; the foreign contributions to Peruvian anthropology are given in the writer's reports on that country.⁶ In Mexico, if we exclude what has been done relatively recently by a few living workers, we have little to mention except the contributions of Morton, and those by two or three French authors;⁷ the history of anthropology in that country, however, is now receiving the attention of Dr Nicolas León.

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¹ *Bulletin U. S. Geological and Geographical Survey*, II, 1876.

² See the bibliography of the Smithsonian Institution, p. 549 of this paper.

³ *6th Annual Report State Bd. of Health of Wisconsin*.

⁴ *Sixteenth Report Peabody Museum, Cambridge*.

⁵ *Early Man in South America. Bull. 32, B.A.E.*

⁶ *Smithsonian Misc. Coll.*, 1911 and 1913.

⁷ E. T. Hamy, *Mission scientifique du Mexique. Anthropologie*, Paris, 1891. Also Quatrefages and Hamy, *Crania Ethnica*.

THE PRESENT CONDITION OF OUR KNOWLEDGE OF NORTH AMERICAN LANGUAGES

By PLINY EARLE GODDARD

CONTENTS

Introduction.....	555
Extinct Stocks—Atakapan, Beothukan, Coahuiltecun, Esselenian, Karankawa, Siuslaw, Timucuan, Wailatpuan.....	561
Nearly Extinct Stocks—Chimariko, Chitimachan, Chumashan, Costanoan, Sal- lan, Shastan, Tonkawan, Tunican, Yakonan.....	565
Stocks Satisfactorily Studied—Chinookan, Haida, Klamath, Kusan, Takelma, Tlingit, Yanan.....	568
Stocks on Which Work is Progressing—Chimakuan, Kalapuyan, Kutenai, Maidu, Piman, Shahaptian, Tanoan, Tsimshian, Wakashan, Yokuts, Yuman.....	571
Stocks Practically Untouched—Caddoan, Miwok, Karok, Keresan, Kiowan, Pomo, Washo, Wintun, Wiyot, Yuchean, Yukian, Yurok, Zuni.....	576
Stocks Presenting Comparative Problems—Algonkian, Athapascan, Eskimo, Iroquoian, Muskogean, Salishan, Shoshonean, Siouan.....	580
Conclusion.....	592
Bibliography.....	593

INTRODUCTION

THE attention given the languages of America since its discovery has resulted from several interests. Missionary spirit was the first of these in point of time and one of the most important in results. A number of individuals of various sects and nationalities realized that it is necessary in order to reach and influence the native mind to have a common language as a means of communication. Racial conceit usually prevents a people generally from acquiring the language of its would-be teachers. The really effective missionaries are those who apply themselves to the study of the native language in question with sufficient earnestness to be able not only to speak it fluently, but to think in it and to construct words and phrases capable of conveying new ideas. We are interested at the present moment only in the by-products of such endeavors—the numerous dictionaries and grammars written by these missionaries to aid themselves and

others in acquiring a mastery of the languages needed in the work of propaganda.

One of the best known and one of the first missionary students of an American language was John Eliot, who, beginning in 1632, was pastor of a church at Roxbury, Massachusetts, for fifty-seven years. During this time he acquired the language of the neighboring Indians, an Algonkian tongue, made a translation of various parts and finally of the whole Bible, and published an essay on the grammar.¹ The people for whom he labored have passed out of existence, but his work is treasured as an example of printing and is of real value as a record of the language formerly spoken in eastern Massachusetts.

Of much greater importance from a linguistic standpoint, is the work of Stephen R. Riggs, who, with his wife Mary, went to the Eastern Sioux in 1837. During many years among these Indians he acquired their language, translated the entire Bible, and published a grammar and dictionary. As a result of his labor and that of his descendants the Sioux generally have learned to write and read their own language. The elderly men are now able to write highly interesting and important accounts of their former life and ceremonies in the Dakota language.

Similar practical results in teaching Indians to write and read their own languages resulted from the invention by Rev. James Evans (1801-46) of a system of syllabic characters which much reduces the effort necessary in such undertakings. By means of these characters the Bible and much other religious literature has been issued in Cree, for which language they were first devised, and in Ojibway and other Algonkian languages of Canada. With certain modifications these characters have been used also for the Athapascan languages of the north and for Eskimo.

Of these northern missionaries, those who have contributed most abundantly to our linguistic knowledge, are: Father A. Lacombe, who issued a grammar and dictionary of Cree in 1874, still the best source of information for that language;² Father Émile

¹ Eliot, (a), (b).

² Lacombe.

Petitot, who issued, besides other works of literary and scientific interest, a large comparative dictionary of the Mackenzie River Athapascan languages;¹ and Father A. G. Morice who has published numerous papers of particular and comparative interest on the Athapascan languages of the north.²

Linguistic work stimulated largely by missionary motives is still in progress. Father Julius Jetté, stationed on the Yukon, has published texts of the Ten'a,³ and Rev. J. W. Chapman, lower on the same river, has issued this year a volume of texts in the related Athapascan⁴ dialect. In Arizona, the Franciscan Fathers of St Michaels have made an exhaustive lexical study of the Navaho language which they have published in the form of a dictionary.⁵

The scientific interest aroused in Europe by the discovery that Sanscrit is genetically related to Greek and Latin was soon communicated to the New World. Before this discovery, it had been generally assumed that Hebrew was the first language to be spoken and the one from which all other languages were descended. The new view of the world languages falling into related groups stirred to activity some of the foremost scholars of Europe. Philology took its place with science and literature as a subject of the highest intellectual importance.

The publication of *Mithridates* in 1816 by Adelung and Vater was the first attempt to present a comparative view of the languages of the world.⁶ Included in this work is a discussion of a considerable number of American languages. In America the interest developed at two definite points. P. S. Duponceau, a Frenchman, who had transferred his activities from our war for independence to political life, was associated with Jefferson and Franklin in the American Philosophical Society of Philadelphia. Among the documents gathered relating to the Indians of the vicinity was the manuscript

¹ Petitot, (a), (b), (c).

² Morice, (a), (b).

³ Jetté.

⁴ Chapman.

⁵ Franciscan Fathers, (a), (b).

⁶ Adelung and Vater.

grammar of Delaware by David Zeisberger in German. Duponceau undertook its translation and became very much impressed with the beautiful organization of the language.¹ He was led by his interest to some comparative observations on the languages of America in general. His studies were stimulated by the work of Adelung and Vater which became accessible to him at this time and by the linguistic works of Wilhelm von Humboldt.

Albert Gallatin, who had been a teacher of languages in his youth, became interested in the languages of America through Alexander von Humboldt, whom it is probable he met when Humboldt was returning from his epoch-making journey through Spanish America. Gallatin, through the Secretary of War, in 1826, sent out a circular containing a list of words, the equivalents of which in the various Indian languages were desired for comparative study. In 1826, the material gathered by Mr Gallatin was used for publication by Adrien Balbi in France.² This publication attracted the attention of the officers of the American Antiquarian Society of Worcester, Mass., and they invited Mr Gallatin to publish his material in full in the *Transactions* of their society. This is the first comparative treatment of the languages of North America.³ It is accompanied by a map showing the distribution of the Indians according to tribes and linguistic grouping. Considering the small amount of material at the time available, Mr Gallatin's conclusions are sound and accurate. He organized and became the first president of the American Ethnological Society in 1842. His interest in the subject continued until his death.

Horatio Hale, at the time a young man, was the ethnologist of the United States Exploring Expedition (1838-1842) under the command of Charles Wilkes. The seventh volume of the publications of this expedition was devoted to ethnology and philology. The greater portion of the work is concerned with the islands of the Pacific, but the native languages of the western coast of North America are comparatively treated. Under the editorship of

¹ Duponceau, (a), (b).

² Balbi.

³ Gallatin, (a).

Gallatin the material gathered by Hale was published in the *Transactions* of the American Ethnological Society, Vol. 2.

Soon after, George Gibbs became interested in ethnology and linguistics. He visited California as ethnologist with an expedition made by Col. M'Kee. This material was published by Schoolcraft who was associated with the Bureau of Indian Affairs in the gathering and publication of information relating to the Indians.

Vocabularies were generally gathered by engineering or other government parties engaged in the new west as occasion offered. Of especial importance are those secured by A. W. Whipple and others in 1853-4, edited by W. W. Turner. Dr Washington Matthews, a surgeon in the U. S. Army stationed in the west, devoted himself to linguistic studies. He prepared a grammar of the Hidatsa language which was published by the government in 1877, following a Grammar and Dictionary published by John Gilmary Shea in 1873. Dr D. G. Brinton, who became professor of American linguistics and archeology at the University of Pennsylvania in 1886, added much to the interest in and discussion of American linguistic problems. He was the first man to hold a chair in an American institution devoted to the study of American languages.

In 1879 the Bureau of American Ethnology was established under the Smithsonian Institution. Major Powell, whose interest in ethnology had been aroused while conducting exploration work for the Geological Survey of the Rocky Mountain Region, was the first head of the Bureau.

The seventh annual report of this Bureau, issued in 1891, contains a classification of the Indians north of Mexico according to linguistic families. In the preparation of this paper Major Powell was assisted in the linguistic comparisons by two men of unusual linguistic ability and equipment, Albert S. Gatschet and J. Owen Dorsey. The publication of this paper marks the end of the first period of scientific linguistic work in America. With the exception of the work of Duponceau and Gallatin, it was stimulated largely by comparative interest. It was considered sufficient to gather selected word lists and make a comparison of the vocabularies so

obtained. By the means of these lists, first Gallatin and later Powell were able to determine the linguistic grouping according to lexical or genetic relationship. For this purpose the methods employed seem to have been fairly adequate. The work of Gallatin has stood except where he lacked even word lists of sufficient extent, or where his praiseworthy caution prevented the grouping of languages which he felt morally certain belonged together. The linguistic families of Powell remain largely undisturbed. His caution separated the Shoshonean language from Nahuatl on the basis of the material at hand.

The two men mentioned above as contributing to Powell's classification inaugurated the second period of linguistic work stimulated by scientific interest rather than missionary zeal in North America. Until their time the chief purpose had been to secure sufficient material to determine to which large group each language belonged. The new interest was two-fold: a psychological interest in the languages themselves, a desire to know what ideas were expressed and what was the mental classification applied to these ideas by the particular people as evidenced by their language; and a historical interest in the changes that had taken place in a single language or in the various languages belonging to one family. Both of these interests have readily lent themselves to wider comparative ones, but it has generally been comparison with linguistic knowledge itself as the main motive rather than a search for a convenient means of grouping people or a means of tracing migrations that has distinguished this second period of study.

The new purposes required more abundant material and more accurate recording of it. J. Owen Dorsey recorded and published texts of native tales and myths from several of the Siouan-speaking tribes. From these texts and from grammatical material secured from the speakers of these languages, Mr Dorsey secured an excellent conception of the general structure of the Siouan languages and of their mutual relationships. Albert S. Gatschet recorded and published a number of texts in the language of the Klamath Indians of Oregon, together with a grammar and dictionary. He also recorded texts and vocabularies of many languages which were

deposited in the Bureau of Ethnology at Washington and still remain unpublished.

Franz Boas, who had spent several seasons with the Eskimo and the Indians on the North Pacific coast, joined the staff of the American Museum of Natural History in 1895. The wide interests of Professor Boas had included the languages of the natives among whom he had worked. Through the research work of the Museum and his contact with the students of anthropology at Columbia University, Professor Boas soon dominated the linguistic work in North America. Largely under his direction and stimulation thousands of pages of texts of Indian languages have been gathered and published. Analytical studies of a large number of these languages have been made and uniform grammatical sketches published. The personal linguistic interest of Professor Boas is primarily psychological, but the historical and comparative aspects have not been neglected.

Of the considerable number of the younger men who have been engaged in the work only a few have had special training in the scientific study of Indo-Germanic or other linguistic families of the Old World. Recently Prof. C. C. Uhlenbeck, who has made a name for himself in Sanscrit and Indo-Germanic philology, has undertaken the study of American languages. Dr J. P. B. de Josselin de Jong has spent two summers studying Algonkian dialects.

EXTINCT STOCKS

Of the fifty-six or more linguistic stocks in existence north of Mexico when the continent was being colonized only eight appear to have become totally extinct. In every case some material of value is extant. It is truly fortunate that in the great decrease of native population in certain regions, such as the eastern portion of the United States and in Oregon and California, a larger number of stocks have not disappeared.

Atakapan. The Atakapa of southwestern Louisiana formerly spoke two dialects which, as far as is known, were all that belonged to this stock. The statement of Dr John Sibley that the Karankawa of Texas spoke the same or a similar language has been proven

incorrect.¹ There remains a vocabulary recorded by Martin Duralde in 1802, 145 words of which were published by Gallatin,² and 54 words, apparently selected from the former list, in the *Transactions* of the American Ethnological Society.³ Doctor Gatschet visited the Atakapa in 1885 and secured a text and other material making a total of about 2,000 words. This material is in the Bureau of American Ethnology and has never been published. When Doctor Gatschet visited the Atakapa he found and heard of nine individuals. It is not likely that any now exist who speak the language consecutively although there are a few who remember many words.

Beothukan. This extinct linguistic stock, formerly spoken in Newfoundland, is known by three vocabularies furnishing altogether 480 words. Dr John Clinch secured a vocabulary, probably from John August, a Beothuk, some time between 1783 and 1788. Rev. John Leigh recorded a vocabulary from a captive Beothuk woman, called Mary March (her native name was Demasduit) in 1819, of 180 words. W. E. Cormack obtained a vocabulary from a Beothuk woman living in his family called Nancy (native name Shanandithit). These are published with discussions by Gatschet in the *Proceedings* of the American Philosophical Society.⁴ Latham was convinced the Beothuk were "a separate section of the Algonkins," but Gatschet with better material pronounced them distinct.

Nothing had been known of living Beothuk since 1827 until in 1912 Doctor Speck found a part-blood Beothuk woman among the Micmac of Nova Scotia. He obtained from her a short vocabulary.⁵

Coahuillecan. This stock, now probably extinct, is discussed by Dr Gatschet under the name Paikawa.⁶ It was formerly represented by several dialects spoken on either side of the lower Rio Grande. There is a catechism in one of these dialects by Bartholome Garcia published in 1760. Dr Gatschet was able in 1886 to collect con-

¹ Sibley.

² Gallatin, (a), pp. 307-367.

³ Gallatin, (b), pp. 95-97.

⁴ Gatschet, (l), (m), (p).

⁵ Speck, (c).

⁶ Gatschet, (r), p. 38.

siderable material of the Conecrudo and Cotoname dialects amounting to about 1,000 words besides phrases and one extremely short text. A few scattered words were recovered from mission records by Prof. H. E. Bolton.

Esselenian. The remains of the only language belonging to this stock are scanty. Esselen seems to have been spoken along the coast of California northward from the Santa Lucia mountains nearly to Monterey bay. There are about two hundred separate words included in a total of three hundred words and phrases. Two short vocabularies were recorded long ago: one of twenty-two words by Jean F. G. de la Pérouse in 1786, and one of thirty-one words by Dionisio Alcalá Galiano in 1792. Later, Duflot de Mofras gave a set of numerals, and Arroyo de la Cuesta fifty words and phrases. Mr H. W. Henshaw secured one hundred and ten words and sixty-eight phrases in 1888. Dr A. L. Kroeber has brought all the available material together and published it with a discussion of the phonetics and grammar.¹

Karankawa. The Karankawa lived on the coast of Texas,—those of whom we have linguistic material near Matagorda bay. Doctor Gatschet² in 1884 was able to secure twenty-five words from an old man and an old woman, both Tonkawa who had lived with Karankawa mates. In 1888, through Prof. F. W. Putnam, Doctor Gatschet learned of a white woman, Mrs Alice W. Oliver, who had lived near the Karankawa and learned to speak the language fairly well. Doctor Gatschet secured from her about 150 words. These vocabularies, with analysis and discussion, Gatschet published in *Peabody Museum Archaeological and Ethnological Papers*,³ pp. 69-167. The Karankawa have been extinct since the middle of the nineteenth century.

Siuslaw. Two closely related dialects, formerly spoken on the Lower Umpqua and Siuslaw rivers, Oregon, were considered to belong to the Yakonan stock until in 1910 Dr Leo J. Frachtenberg, while collecting additional material, concluded that they form an

¹ Kroeber, (a), 49-68.

² Gatschet, (f), pp. 69-167.

³ Gatschet (o).

independent stock. Vocabularies of both dialects were recorded by Doctor Gatschet in 1884. Smaller ones had been collected by Doctor Milhau and Mr Bissell in 1881. These vocabularies remain unpublished in the Bureau of American Ethnology. Doctor Frachtenberg secured a good-sized vocabulary, grammatical notes, and a few texts of the Lower Umpqua dialect. The texts have been published¹ and a grammatical sketch, now in press, will appear in Part 2, Bulletin 40, Bureau of American Ethnology. Doctor Frachtenberg's informant was an old woman who was not accustomed to the use of her own language. The stock is now extinct.

Timucuan. This language was formerly spoken by a group of tribes in northern Florida. They were the first natives within the present boundaries of the United States to come in contact with Europeans. Our linguistic sources are the writings of two missionaries, Francisco Pareja who was with them from 1594 to 1610, and Gregorio de Mouilla. Their church literature contains abundant and excellent text material which was studied and selections published by Gatschet in the *Proceedings* of the American Philosophical Society.² At that time his *Arte de la Lengua Timuquana* was not available. It has since been reprinted (1886). These people either ceased to exist or to speak the language soon after 1821. There is some indication of relationship to Muskogean, but Doctor Swanton, who makes this statement, is not yet ready to give a final opinion.

Waiilatpuan. Two tribes of Oregon spoke dialects rather remotely connected, which, taken together, make up the linguistic stock known as Waiilatpuan. The Cayuse lived on the headwaters of the Walla Walla, Umatilla, and Grande Ronde rivers. They have been extinct for fifty years. The Molala lived between Mt Hood and Mt Scott. Doctor Frachtenberg secured in 1910 from the last person speaking this dialect an extensive vocabulary, grammatical notes, and more than thirty texts. This material, now in manuscript and the property of the Bureau of American Ethnology,

¹ Frachtenberg (*ε*).

² Gatschet, (*w*), (*d*).

³ Pareja.

it is expected will be published as a bulletin of that Bureau. The only other material known to be in existence is a vocabulary of Cayuse secured by Hale.¹

NEARLY EXTINCT STOCKS

In addition to the seven linguistic stocks which are totally extinct, there are nine each of which is spoken by a few individuals only, no one of whom is able to furnish material of great extent or value. Of none of these languages do we have ample or satisfactory recorded material.

Chimariko (Chimarikan of Powers). The Chimariko lived on the main Trinity river south of the mouth of South fork as far as Taylor's flat, California. Stephen Powers recorded a vocabulary of about 200 words in 1875, which he published.² Jeremiah Curtin is said to have secured a good vocabulary in 1889. After attempts by Kroeber and Goddard attended with but slight success, Dr Roland B. Dixon visited the surviving Chimariko in 1906 and secured texts which, with translations and notes, cover twenty printed pages. Doctor Dixon obtained other valuable material in the form of lists of words and phrases. This material, with analysis and discussion, has been published.³ It is the opinion of Doctor Dixon that Chimariko is related to Shasta.

Chitimacha. This is the language of a single tribe, the Chitimacha of southern Louisiana. According to the last census there are 69 persons of Chitimacha blood. Most of them have employed French patois as a means of communication even among themselves for many years. The first published linguistic material known is a vocabulary furnished by Martin Duralde, but probably recorded by Murray about the beginning of the nineteenth century. This vocabulary was included by Gallatin in his comparative list.⁴ Doctor Gatschet visited the Chitimacha in 1881-2 and secured considerable linguistic material, including some texts. Only a few words of this have been published.⁵ Doctor Swanton worked with

¹ Gallatin, (b), pp. 97-98.

² Powell, (a), pp. 474-477.

³ Dixon, (c).

⁴ Gallatin, (a), pp. 303-367.

⁵ Gatschet, (f).

the Chitimacha in 1907 and 1908, and secured additional texts which have not yet been published. He has also carefully revised the material secured by Doctor Gatschet.

Chumashan. The Chumashan dialects, formerly spoken on the Santa Barbara islands and adjacent coast of California, are generally known by the names of the five missions with which the speakers were afterward connected. Of these dialects there are vocabularies collected by various individuals which Doctor Kroeber has brought together and published with similar material obtained by himself.¹ Some grammatical material gathered by the same author from Indians still speaking the Santa Ynez dialect appears in an earlier volume of the same series.²

Costanoan. This name is given to the dialects formerly spoken on the coast of California from the Golden Gate southward to Monterey. Gatschet and others have considered these dialects related to those of the Moquelumnan stock (Miwok) and have called the combined stock Mutsun.³ Powell separated them in 1891 on the advice of Curtin.⁴ We have a grammar of the Costanoan by Father Felipe Arroyo de la Cuesta, published in 1861.⁵ Doctor Kroeber has a short grammatical sketch and a text of one of the dialects.⁶ Grammatical notes of two other dialects, short texts, and comparative vocabularies are published by the same author in the same series.⁷ The probable relationship to Miwok is discussed in the latter paper.

Salinan. There are two known dialects of Salinan, those of two missions, San Antonio and San Miguel, on the coast of California. Of the San Antonio dialect there is a vocabulary recorded by Father Buenaventura Sitjar, published by Shea, vol. VII, *Library of American Linguistics*, and a vocabulary of the San Miguel dialect recorded by Hale.⁸ Doctor Kroeber secured some

¹ Kroeber, (j).

² Kroeber, (a), pp. 31-43.

³ Gatschet, (b), pp. 157-8.

⁴ Powell, (c).

⁵ de la Cuesta.

⁶ Kroeber, (a), pp. 69-80.

⁷ Kroeber, (j), pp. 239-263.

⁸ Gallatin, (b), p. 126.

words of the latter dialect at Jolon, in 1901-2. These, with grammatical notes and comparative vocabularies, have been published.¹

Shastan (Sastean of Powell). The Shastan stock, as formerly known, was believed to have occupied the Klamath river valley above Happy Camp, California, and to have extended somewhat into Oregon. Doctor Dixon² has traced the stock to the Rogue river valley, Oregon, to Salmon and New rivers, California, and to the head of the Sacramento river. With the Shasta he has combined the Achomawi, the Palaihnihan of Powell,—a combination favored by Gatschet. The languages making up the new group differ considerably from each other. A vocabulary of the Shasta recorded by Hale is reprinted with others from Lieuts. Ross, Crook, and Hazen;³ and there is also one from Powers.⁴ Considerable linguistic material, collected by Doctor Dixon, has not yet been published.

Tonkawan. The Tonkawa, who alone constitute the stock bearing their name, lived in southwestern Texas. There are at present forty-two of them on a reservation in Oklahoma. Oscar Loew in 1872 secured a vocabulary which Gatschet published in *Zwölf Sprachen aus dem Südwesten Nordamerikas*,⁵ together with a vocabulary furnished by von Rupperecht. Altogether these make three hundred words and some phrases. Doctor Gatschet discussed the Tonkawa on the basis of this material in *Die Sprache der Tonkawas*.⁶ Subsequently Doctor Gatschet himself collected a vocabulary of upward of a thousand words and about fifty pages of texts, now in the keeping of the Bureau of American Ethnology.

Tunican. This language was spoken on each side of the Mississippi river near the mouth of the Yazoo river. There is no published Tunican linguistic material. They were visited in 1886 by Gatschet who obtained a considerable vocabulary and concluded that the language was an independent one. Doctor Swanton visited

¹ Kroeber, (a), pp. 43-47.

² Dixon, (a, b).

³ Gallatin, (b), p. 98.

⁴ Powell, (a).

⁵ Gatschet, (a).

⁶ Gatschet, (c), pp. 64-73; (x), p. 318.

the Tunica (of whom 43 remain according to the census of 1910) in 1907 and secured additional material which will be published together with that of Gatschet. Swanton¹ thinks there is good reason to suppose that Koroa, Yazoo, Tioux, and Grigra, now extinct at least in language, were related to the Tunica of whom they were neighbors.

Yakonan. Two dialects, Yaquina and Alsea spoken in western Oregon within the territory covered by the present county of Lincoln, since the separation of two dialects to make the new Siuslaw stock, comprise the Yakonan stock. The Yaquina dialect is no longer spoken and there are only three who are still able to speak Alsea. J. Owen Dorsey recorded vocabularies of both dialects in 1884. Dr Livingston Farrand secured a vocabulary and five texts of Alsea in 1901. Doctor Frachtenberg recorded about twenty texts of Alsea and grammatical notes in 1910. The texts will probably be published as a bulletin of the Bureau of American Ethnology.

STOCKS SATISFACTORILY STUDIED

There are seven of the linguistic stocks which have already received such study as to remove them from the list of those demanding immediate attention. These stocks, it is needless to say, are among the less extended ones, represented by one or two languages.

Chinookan. This language was spoken on both sides of the Columbia river in Oregon below the Dalles and some distance up the Willamette river. There are two main dialects, known as Upper and Lower Chinook. The Upper dialect consists of the following subdivisions: Wasco and Wishram in the region of the Dalles, and Kathlamet and Clackamas in the lower valley of the Columbia. The Lower dialect is represented by the Clatsop on the south bank and the Chinook proper on the north bank. The last census gives the population of the five tribes making up the Chinookan stock as 897. Vocabularies, grammatical notes, and discussions of minor importance have been given by Hale, Gallatin, Sapir, and Boas.²

¹ Swanton, (c), pp. 18-24.

² Boas, (e); Sapir, (a).

Several volumes of texts have been published.¹ A grammatical discussion of the language by Franz Boas, fully illustrated, is included in the *Handbook of American Indian Languages*.²

The phonetics of Chinook present some interesting problems which might repay further attention.

Haida. The Haida, called Skittagetan by Powell, is spoken on the Queen Charlotte islands in two dialects: Skidegate and Masset. Vocabularies are given by Gallatin,³ Gibbs,⁴ Tolmie, Dawson, and others. The really important work on the language has been done by Doctor Swanton, who has published the Masset dialect, 539 pages of text and translation, and the Skidegate dialect.⁵ The latter work has texts only to page 109 and English translation in the remaining pages. The American Ethnological Society intends to publish, in volume VII of its Publications, the texts corresponding to the translation of the pages following 110. A grammatical sketch of Haida by Doctor Swanton is in the *Handbook of American Indian Languages*. The possible or even probable relationship of Haida to Tlingit and to Athapascan has been entertained by Boas, Swanton, and Sapir.

Klamath (Lutuamian of Powell). Two tribes, Modoc and Klamath, speaking a single dialect make up the Klamath stock. The Klamath live about Klamath lakes in south central Oregon; the Modoc formerly lived south of them in northern California. The latter tribe were prisoners of war for many years in Oklahoma. They have now been returned to Oregon. The language was first known from a vocabulary secured by Hale.⁶ Doctor Gatschet, as the result of long study in the field, published in 1890 a large number of texts followed by a grammar and dictionary, both Klamath-English and English-Klamath.⁷ This was the first thorough study of a language of North America carried through and fully published

¹ Boas, (f), (n); Sapir, (c).

² Boas, (r), pp. 559-678.

³ Gallatin, (b).

⁴ Gibbs, (c), pp. 135-142.

⁵ Swanton, (e), (b).

⁶ Boas, (r), pp. 209-282.

⁷ Gallatin, (b), p. 109.

⁸ Gatschet, (q), (r).

by one man. It is also Doctor Gatschet's largest and best single contribution to American linguistics.

Kusan. A small stock now nearly extinct was spoken along Coos bay and river, Oregon. Texts collected in 1903 by H. H. St Clair and by Dr L. J. Frachtenberg in 1909 have been published by the latter.¹ A grammatical sketch of the language by Doctor Frachtenberg is in the Handbook of American Indian Languages, Part II.² It is unfortunate that a rather dissimilar dialect, Miluk, has become extinct with no record except a few notes secured by Mr St Clair in 1903.

Takelma (Takilman of Powell). This stock consists of a single language spoken in two dialects on the middle portion of Rogue river in southern Oregon. J. Owen Dorsey secured a vocabulary in 1884 which has never been published. On the basis of this vocabulary, Gatschet concluded Takelma was unrelated to other languages.³ Doctor Sapir very fortunately secured a splendid series of texts in 1906 from Frances Johnston.⁴ Based on these texts a grammatical sketch has been included in the Handbook of American Indian Languages, Part II.⁵ The last census has but a single individual listed as belonging to this stock.

Tlingit (Koluschan of Powell). The Tlingit language was known to Gallatin and discussed by him under the name Koluschen from a vocabulary by Davidoff.⁶ The Tlingit occupy the southern coast of Alaska southward from Controler Bay to British Columbia. They number at present 4,458. The only particularly distinct dialect is that spoken by the Tagish who live in the interior. Doctor Swanton recorded texts among the Tlingit in 1904 which have been published.⁷ A grammatical sketch of the Tlingit language prepared by Doctor Swanton appears in the Handbook of American Indian Languages.⁸ More text material is needed for this language. It

¹ Frachtenberg, (a).

² Frachtenberg, (b).

³ Powell, (c), p. 121.

⁴ Sapir, (b).

⁵ Sapir, (f).

⁶ Gallatin, (a), pp. 14-15, 305-367.

⁷ Swanton, (f).

⁸ Boas, (r), pp. 159-204.

has been frequently suggested that Tlingit is related to Athapascan and perhaps also to Haida. Of the latter suggested relationship Doctor Swanton has a discussion.¹

Yanan. The Yana seem never to have been numerous. They live in north central California. The language was known only by vocabularies collected by Powell in 1880, and by Curtin in 1884² until they were visited by Doctor Dixon in 1900 for the American Museum of Natural History and by Doctor Sapir in 1907 for the University of California. The combined material of Dixon and Sapir was published by the latter. The language is known in two dialects, the northern and central, both of which were recorded by Doctor Sapir. A third dialect, varying more widely, spoken to the south of the first two, was supposed by Sapir to be extinct. Since then a single individual, whose only means of communication was that dialect, has been found. He has been residing for some years at the Museum of Anthropology of the University of California at San Francisco.

STOCKS ON WHICH WORK IS PROGRESSING

Fair progress has been made in the study of eleven other stocks. In the case of several of them considerable material has been gathered which as yet has not been published. For some of the others a fair amount has been published, but this needs supplementing in one direction or another.

Chimakuan. There are said to be two tribes and probably rather distinct languages belonging to this stock. Of the Chimakum tribe the last census reports three persons still alive. They formerly lived in western Washington on the peninsula between Hood canal and Port Townsend. Myron Eells secured a vocabulary of 780 words, which seems never to have been published.³ The manuscript is in the Bureau of American Ethnology. Professor Boas in 1890 secured 1,250 words together with grammatical forms and

¹ Swanton, (4), pp. 472-485.

² Powell, (c), p. 135.

³ Sapir, (e).

⁴ *The American Antiquarian and Oriental Journal*, vol. 3, pp. 52-54, Chicago, 1880-1.

sentences. A digest of his material is published in the *American Anthropologist*.¹ The Quileute live on the coast of Washington south of Cape Flattery. The last census gives the population as 259; and for the subtribe Hoh, 44. No linguistic material from the tribe seems to be in print. They are to be visited during the present year by Doctor Frachtenberg.

Kalapuyan (Kalapooian of Powell). There were formerly a number of dialects spoken in the Willamette valley, Oregon, grouped under the stock name, Kalapuyan. Several of these dialects are now extinct and the number still speaking dialects of the language is about fifteen. Hale secured a short vocabulary (Willamet).² Gatschet recorded a vocabulary and a few texts of the Atfalati dialect, now extinct. In 1913, Doctor Frachtenberg secured a vocabulary, grammatical notes, and ten texts. He is now engaged in obtaining additional material.

Kutenai (Kitunahan of Powell). The Kutenai tribe, which makes up the linguistic stock, lives in southeastern British Columbia and northern Montana and Idaho. The language is spoken in two slightly differing dialects. They were visited by A. F. Chamberlain in 1891 and by Professor Boas in 1888 and again in 1914. The results of Professor Boas's first visit appear in *Report of the British Association for the Advancement of Science*.³ Professor Chamberlain has published a number of papers dealing with the Kutenai language.⁴ There are numerous vocabularies by Hale, Tolmie and Dawson, and others.

Maidu (Pujunan of Powell). The Maidu live in north central California east of the Sacramento river and now number 1,100. The language of the Maidu, according to Doctor Dixon, our chief authority, is spoken in three dialects. It was first mentioned by Hale who gives a vocabulary furnished by Mr Dana.⁵ Doctor Dixon recorded texts and collected general linguistic material while working among the Maidu for the American Museum of

¹ Boas, (d).

² Gallatin, (b), pp. 97-99.

³ Boas, (l), pp. 889-893.

⁴ Chamberlain, (a-c, e-h).

⁵ Gallatin, (b), pp. 124-5.

Natural History in 1902 and 1903. The texts have been published,¹ and, a grammatical treatise based on them is in the Handbook of American Indian Languages.² Further work should be done with the Maidu, since Doctor Dixon dealt with only one dialect and, because of the other work required of him, he could not devote his time to a thorough linguistic study of them.

Piman. The name Piman was used by Powell as the name for the group of languages spoken in Arizona and Sonora by the Pima, Nevome, Papago, and related tribes. Buschmann considered the Pima related to Nahuatl, the language of the natives of the valley of Mexico, and to the Shoshonean languages.³ Doctor Kroeber has recently reargued the case.⁴ There is a Spanish dictionary of the Nevome dialect made in the 18th century, published in 1862, in Shea's *Library of American Linguistics*, vol. 5. Vocabularies have been published by Doctor Scouler,⁵ Doctor Parry,⁶ and by Whipple.⁷ Dr Frank Russell recorded a goodly number of texts of songs and speeches which have been published with interlinear translations.⁸ Juan Dolores has made an analysis of the Papago and has published a list of the verb stems.

Shahaptian. The Shahaptian stock is composed of a number of tribes which formerly lived in southwestern Idaho, southeastern Washington, and northeastern Oregon. The best known of these are: Klinkitat, Nez Percé, Paloo, Topinish, Umatilla, Wallawalla, Warm Springs, and Yakima. There are various vocabularies,⁹ and a grammar of Nez Percé, by J. M. Cataldo, also a dictionary by L. Van Gorp. Dr H. J. Spinden spent the summers of 1907 and 1908 with the Nez Percé. He recorded some of their myths in texts which have not yet been published. This large and rather diversified family offers an excellent opportunity for intensive and comparative study.

¹ Dixon, (c).

² Boas, (r), pp. 679-734.

³ Buschmann, (c).

⁴ Kroeber, (e), pp. 154-165.

⁵ Scouler, p. 248; Gallatin, (b), p. 129.

⁶ Schoolcraft, Part 3, pp. 400-402.

⁷ Whipple, p. 94.

⁸ Russell, pp. 172-189.

⁹ Hale, (a), pp. 542-561; Gallatin, (b), p. 129.

Tanoan. The dialects of the villages of the Rio Grande valley, New Mexico, have recently received the very careful attention of John P. Harrington. As yet he has been able to issue only introductory papers. He makes three groups of these dialects: The Tiwa, including the villages of Taos, Picuris, Sandia, Isleta, and Isleta del Sur, to which he adds the extinct Piro; the Towa, consisting of Jemez and the former village of Pecos; and the Tewa, including San Juan, Santa Clara, San Ildefonso, Nambe, Pojoaque, Tesuque, and Hano. Harrington has published in the *American Anthropologist* on the dialect of Taos,¹ on the Tewa,² and on the Piro.³ In collaboration with Junius Henderson he has published the Tewa names of the animals of the region. Of this extinct dialect, Piro, we have a vocabulary recorded with care by John R. Bartlett, in 1852, published by F. W. Hodge in 1909.⁴ The earlier material of the Tanoan dialects consists of vocabularies and a text by Gatschet.⁵

Tsimshian (Chimmesyan of Powell). The Tsimshian live on the northern coast of British Columbia. The language is spoken in three dialects: the Tsimshian proper on the Skeena river and the islands south; the Niska on the Nass river; and the Gyitkshan on the upper courses of the Skeena. According to the latest available figures there are 4,392 speaking these dialects. Count von der Schulenburg discussed the Tsimshian in 1894. Professor Boas has preliminary discussions in the Fifth, Tenth, and Eleventh Reports of the Committee on the Northwestern Tribes of Canada. He has also published two volumes of texts.⁶ These texts were written out in Tsimshian by Mr Henry W. Tate, a full-blood, and revised by Professor Boas by the aid of another Tsimshian. A discussion of the grammar has been published by him in the Handbook of American Indian Languages.⁷ Additional texts of the three dialects should be recorded.

¹ Harrington, (c).

² Harrington, (d).

³ Harrington, (b).

⁴ Bartlett.

⁵ Gatschet, (s).

⁶ Boas, (s, t).

⁷ Boas, (p), pp. 283-422.

Wakashan. The Wakashan stock includes two rather distinct groups of dialects. The Nootka, spoken on the west coast of Vancouver island and about Cape Flattery has been known since the voyages of Captain Cook, 1776-80 (published in 1782). The Kwakiutl, itself composed of three groups of subdialects, is spoken on the northern shore of Vancouver island and on the mainland of British Columbia. The northern division consists of the dialect spoken on Gardner inlet and Douglas channel; the central division about Milbank sound and Rivers inlet; and the southern by the tribes of the south. There are known to be four dialects spoken by the southern division of the Kwakiutl proper. Of these only that spoken by the Kwakiutl tribe of Vancouver island has been well studied. Rev. A. J. Hall published a grammar of this dialect in 1889. Professor Boas, chiefly with the assistance of George Hunt, collected and has published many Kwakiutl texts. A grammatical discussion of Kwakiutl by Professor Boas is in the Handbook of American Indian Languages. There are briefer and earlier grammatical sketches in the Sixth and Eleventh Reports of the Committee on the Northwestern Tribes of Canada.²

The Nootka, whose language until recently was unrepresented by texts, were visited by Doctor Sapir in 1910 and 1913-1914. He secured 1028 manuscript pages of texts.

The northern and central divisions of the Kwakiutl should receive immediate attention.

Yokuts (Mariposan of Powell). The dialects to which the name Yokuts is attached were spoken in the southern portion of the great interior valley of California and the mountains which border it. Six vocabularies were published in 1877, three of which were recorded by Stephen Powers and two by Adam Johnston.³ Doctor Kroeber recorded considerable material during the years 1900, 1902-1904, including a few texts.⁴ Additional text material should be recorded without delay.

¹ Boas, (i, q, u, v).

² Boas, (r), pp. 423-558.

³ Boas, (c).

⁴ Powell, (a), pp. 570-585.

⁵ Kroeber, (c).

Yuman. The languages of the Yuman stock, according to J. P. Harrington,¹ fall into three main groups: The eastern includes Havasupai, Walapai, Tonto, Yavapai; the central, Mohave, Yuma, Maricopa, Diegueño, Cocopa; the Lower California, Kiliwi and Santo Tomás, and Cochimi. The people speaking these languages live in Arizona, California, and Mexico. The earlier information and linguistic material, in the form of vocabularies and comments, was edited and published by Turner² in 1856, and similar material was edited by Gatschet³ in 1879. Recently Yuma, Mohave, and Diegueño have received the attention of Mr Harrington. A short discussion of the Yuman languages by him appears in the *Journal of American Folk-Lore*.⁴ In conjunction with Doctor Kroeber he has published a short paper on the phonetics of Diegueño.⁵ Doctor Kroeber has a paper on the phonetics of Mohave.⁶

STOCKS PRACTICALLY UNTOUCHED

There are thirteen linguistic stocks for which the published material is so scanty that little conception of the character of the dialects representing them can be formed. For the larger number of these stocks only short vocabularies are in existence. In all cases there are a sufficient number still speaking the dialects of these stocks to make a thorough study of them possible.

Caddoan. The name Caddoan was chosen by Powell for one of the more widely distributed of the linguistic stocks. There are three geographical groups: the northern, the Arikara who lived with the Mandan and Hidatsa on the upper Missouri; the middle, the four tribes of Pawnee; and the southern, the Caddo, Wichita, and Kichai, formerly in Oklahoma, Texas, and Louisiana. There is a vocabulary of Wichita by Capt. R. B. Marcy taken in 1852, published by him, with remarks by Turner.⁷ Another vocabulary by Marcy is in Schoolcraft, part V, pp. 709-712. Whipple took down vocabu-

¹ Harrington, (a), p. 324.

² Turner, (b), pp. 95-103.

³ Gatschet, (g), pp. 399-485; (e).

⁴ Harrington, (a).

⁵ Kroeber and Harrington, (n).

⁶ Kroeber, (l).

⁷ Marcy, pp. 307-311.

laries of the Pawnee, Kichai, and Hueco (Waco).¹ Mr John B. Dunbar, who was born among the Pawnee, with whom his father was a missionary, contributed a grammatical sketch to Grinnell's *Pawnee Hero Stories and Folk-Tales*.² He compiled additional grammatical material and a vocabulary unpublished at the time of his death which occurred this year. No satisfactory linguistic studies have ever been made of any language of the stock.

Miwok (Moquelumnan of Powell). Among the Miwok are included a group of rather scattered dialects in the central portion of the great valley of California and north of San Francisco bay. At times these dialects have been grouped with those now known as Costanoan under the name Mutsun. Several Miwok dialects are printed in *Contributions to North American Ethnology*, Vol. III.³ Dr C. Hart Merriam has discussed the distribution of the dialects of this stock, called by him Mewan. Dr S. A. Barrett has published a paper on the geographical distribution of the dialects, giving vocabularies as illustrations of dialectic differences.⁴ Doctor Kroeber has discussed the dialects of Miwok in two papers. The latter article includes vocabularies and four pages of texts. It is important that text material from the Miwok be collected without delay.

Karok (Quoratean of Powell). The Karok occupy the valley of the Klamath river, California, in the middle of its course. George Gibbs, the first to describe them, secured a vocabulary in 1852.⁵ Powers recorded a vocabulary in 1872 which was published with a number of others by Powell.⁶ Doctor Kroeber has published a grammatical sketch of the language to which a short text is added.⁷ A thorough study of this important language is a pressing need.

Keresan. Although certain villages along the Rio Grande in New Mexico, first visited by the Spanish in 1540, have long been

¹ Whipple, pp. 65-79.

² Dunbar, pp. 409-437.

³ Powell, (a), pp. 535-550.

⁴ Barrett, (b).

⁵ Kroeber, (b), (k), pp. 278-319.

⁶ Gibbs, (a), pp. 440-445.

⁷ Powell, (a), pp. 447-457.

⁸ Kroeber, (k), pp. 427-435.

known as Keres, or Queres, the language they speak has received little attention. Vocabularies by O. Loew and Francis Klett are published by Gatschet.¹ It is believed that Acoma and Laguna, the western villages, have a common dialect somewhat different from that employed in the eastern villages, Cochiti, Sia, Santa Ana, San Felipe, and Santo Domingo.

Kiowan. The language of the Kiowa, one of the best known tribes in North America, is itself almost unknown. There is a vocabulary by A. W. Whipple,² and Gatschet has a discussion of the phonetics.³ Gatschet recorded in 1880 a vocabulary and some texts, but these have never been published. James Mooney, who has devoted much time to the history and ethnology of the Kiowa, has published the texts of some songs and glossaries with some discussion of the language.⁴

Pomo (Kulanapan of Powell). The Pomo dialects, eight in number, are spoken north of San Francisco, California, in Russian River valley and about Clear lake, and on the coast. The dialects and their boundaries were worked out with considerable care by Doctor Barrett, who has published an account of their distribution in which vocabularies are included.⁵ Doctor Kroeber has published a discussion of Pomo with word lists and a text.⁶ There is earlier material by Gibbs⁷ and by Powers.⁸ Texts of the various Pomo dialects are much needed.

Washo. This stock is composed of a single dialect, as far as is known, spoken by the Washo who live in Nevada and California in the vicinity of Lake Tahoe. Gatschet⁹ decided from a few vocabularies that Washo was not related to any other language. Doctor

¹ Gatschet, (*g*), pp. 424-465. These appear to have been first published in Petermanns Mittheilungen, 1876, pp. 209-216.

² Whipple, pp. 78-80.

³ Gatschet, (*l*).

⁴ Mooney, (*b*), pp. 1081-1091; (*c*).

⁵ Barrett, (*a*).

⁶ Kroeber, (*k*), pp. 320-347.

⁷ Gibbs, (*a*), pp. 428-434.

⁸ Powell, (*a*), pp. 491-517.

⁹ Gatschet, (*h*), p. 255.

Kroeber, incidental to short visits to Reno, Nevada, in 1906, secured a vocabulary, grammatical material, and two texts.¹

Wintun (Copehan of Powell). The number of dialects included in the Wintun stock is not known. They are spoken in northwestern California along the upper waters of Trinity river. A list of 22 words collected by Mr Dana is given by Hale.² Powell published 12 separate vocabularies,³ collected by several individuals. Mr Wilson, a Harvard student, began work on the Wintun in 1903, but died before much material was collected. Doctor Barrett collected and published vocabularies from three dialects.⁴ Work on the dialects of this stock should be inaugurated immediately.

Wiyot (Wishoskan of Powell). There are two vocabularies obtained by George Gibbs in 1852, published first in Schoolcraft,⁵ and reprinted by Powell with one by Ezra Williams.⁶ Doctor Kroeber has made a special study of Wiyot and has published word lists, grammatical forms, and three texts.⁷ It is much desired that additional text material should be recorded.

Yuchean (Uchean of Powell). The Yuchi formerly lived on Savannah river, Georgia; they now live with the Creeks in Oklahoma and are estimated to number 500. Linguistically they have been known only by a vocabulary published by Gallatin, credited by him to Ridge and Ware.⁸ Doctor Speck visited them during the summers of 1904 and 1905 for the Bureau of American Ethnology and the American Museum of Natural History. Only a few pages of the linguistic results of this work have appeared in print.⁹

Yukian. There are four languages or strongly differentiated dialects belonging to this stock: the Yuki proper in Round Valley on Eel river, California, the Coast Yuki, on the coast west, the Huchnom, on South Eel river, and Wappo, south on the headwaters

¹ Kroeber, (d).

² Gallatin, (b), p. 122.

³ Powell, (a), pp. 518-534.

⁴ Barrett, (a), pp. 81-87.

⁵ Gibbs, (a), pp. 434-440.

⁶ Powell, (a), pp. 478-482.

⁷ Kroeber, (k), pp. 384-413.

⁸ Gallatin, (a), pp. 303-367.

⁹ Speck, (d), pp. 15-17.

of Russian river. Vocabularies were published in 1877, two of which were recorded by Powers and by Lieut. Edward Ross.¹ The latter first appeared in *Historical Magazine*, Apr. 1863. Doctor Barrett² has published comparative vocabularies, and Doctor Kroeber³ has discussed the Yuki, giving word lists and a text.

Yurok (Weitspekan of Powell). The Yurok language is spoken in the villages along the lower portion of the Klamath river, California, and the coast south including Trinidad bay. There are four dialects, the most important being spoken on the Klamath and the other three on the coast. George Gibbs⁴ secured a vocabulary in 1852 which is published in Schoolcraft and republished with others by Powell.⁵ Doctor Kroeber, who has recorded considerable Yurok material, has published a grammatical sketch, vocabularies, and a short text.⁶ Dr. T. T. Waterman has visited the Yurok for linguistic study. It is to be hoped that the material already accumulated by Kroeber and Waterman may soon appear in print.

Zuñi. The language of Zuñi is spoken at one mother village by that name. When first known there were seven villages, those first visited by Coronado. Recently villages have sprung up near the farming lands. The language has been placed on record only in vocabularies collected by Lieut. Simpson,⁷ Lieut. Whipple,⁸ and Capt. Eaton,⁹ and occasional words and short texts in the writings of F. H. Cushing and Mrs Matilda Coxe Stevenson.

STOCKS PRESENTING COMPARATIVE PROBLEMS

In North America north of Mexico there are eight stocks which offer splendid opportunities for linguistic work. They are particularly attractive because each of them consists of a large number of dialects differing considerably from each other and distributed

¹ Powell, (a), pp. 483-9.

² Barrett, (a), pp. 69-80.

³ Kroeber, (k), pp. 348-383.

⁴ Gibbs, (a), pp. 440-445.

⁵ Powell, (a), pp. 447-457.

⁶ Kroeber, (k), pp. 414-426.

⁷ Simpson, pp. 140-3.

⁸ Whipple, pp. 92-93.

⁹ Schoolcraft, Part 4, pp. 416-431.

over considerable areas. In each of these stocks there are definite sound shifts obeying phonetic laws which can be established, development of lexical contents in accordance with the geographical, social, and economic environment, and often with independent morphological features. To the working out of these problems several individuals are devoting their efforts.

Algonkian. Of all the languages north of Mexico, those composing the Algonkian stock have been brought most constantly to the attention of the general public. From them a considerable number of words in common use have been derived. Among these are: moose, moccasin, squaw, pappoose, squash, succotash. These languages were spoken along the entire Atlantic coast from Labrador to Pamlico sound, North Carolina. In Canada, they reached as far west as the Rocky mountains. With the exception of the Iroquois, the Algonkian tribes formerly occupied the vast territory north of the Ohio river and east of the Mississippi. Besides, there were great Algonkian-speaking tribes, the Cheyenne, Arapaho, and Gros Ventre, on the western prairies. These many languages and dialects fall into four great groups: Blackfoot, Cheyenne, Arapaho, and Eastern-Central. The Blackfoot group includes the languages of the closely related tribes, Piegan, Blood, and Blackfoot. The Cheyenne consists of the language spoken by that tribe and probably the extinct Sutaio. The Arapaho includes the language of the Gros Ventre (Atsina) as well as the Arapaho proper. These three western groups of languages are in sharp distinction from the Eastern-Central group. The latter group may be subdivided into Central and Eastern sub-groups. The Central sub-group contains (a) Cree-Montagnais; (b) Menomini; (c) Sauk, Fox, Kickapoo, Shawnee; (d) Ojibway, Potawatomi, Ottawa, Algonkin, Peoria; (e) Natick, (f) Delaware. The Eastern sub-group consists of the Micmac, Malecite, Passamaquoddy, Penobscot, and Abnaki. A discussion of the relationship of Algonkian languages has been published by Doctor Michelson,¹ from which account the above summary has been made. The literature of the Algonkian languages begins in 1609 when Lescarbot included the numerals from

¹ Michelson.

1 to 10 in his *Histoire de la Nouvelle France*. Pilling, who published a bibliography of Algonkian linguistic literature in 1891,¹ reported 36 grammars, 45 dictionaries, and 609 vocabularies. The grammars include one of Delaware by Zeisberger translated by Duponceau, one of Cree by Lacombe, one of Blackfoot by Tims, and of Micmac by Rand. Besides the translation of the complete Bible by Eliot into the Massachuset language and by Mason into Cree, parts of the Bible have been rendered into a large number of languages by the various missionaries. The Cree syllabaries mentioned above have greatly facilitated the publication in the various languages of material to be read by the Indians. The serious scientific study of the Algonkian languages began with the field-work of William Jones, whose paternal grandmother was a Fox Indian. From this grandmother, with whom Jones lived for nine years in his childhood, he acquired the Fox language. He was graduated from Harvard University in 1900 and took the degree of Ph.D. at Columbia University in 1904. Doctor Jones's field-work began in 1901 and continued until 1906. During these years he collected texts and general linguistic material from Fox, Kickapoo, and Ojibway. This work was supported by the American Museum of Natural History, the Bureau of American Ethnology, and the Carnegie Institution of Washington. Before the material could be published, Doctor Jones was induced to leave this field for which he was so peculiarly fitted and to go to the Philippine Islands where he lost his life. Of the material recorded by him a volume, *Fox Texts*,² was published in 1907. *Kickapoo Texts*,³ volume 9 of the same series, and *Ojibway Texts*, volume 7, are in press. A grammatical sketch of Fox appears in the *Handbook of Indian Languages*.⁴ This material has been issued under the direction of Professor Boas to the revision and amplification of which Doctor Michelson has generously contributed.

On his own account Doctor Michelson has worked with Piegan,

¹ Pilling, (e).

² Eliot, (a).

³ Jones, (b).

⁴ Jones, (c).

⁵ Boas, (r), pp. 737-875.

Cheyenne, Sutaio, Arapaho, Atsina, Menomini, Ojibway, Ottawa, Potawatomi, Fox, Sauk, Kickapoo, Cree, Shawnee, Munsee, Delaware, Micmac, Penobscot, and Abnaki. Of these various languages he has grammatical notes and of most of them a few texts. The grammatical notes in part have been published in the *Linguistic Classification of Algonquian Tribes*,¹ referred to above. The texts have not been published. Of the Fox language, Doctor Michelson has upward of 9000 manuscript pages.

Two European scholars, Dr H. P. B. de Josselin de Jong and Dr C. C. Uhlenbeck have contributed to the Algonkian linguistic work both in field-work and publications. Doctor de Jong visited the Ojibway in 1911 and has published collections of songs and texts.² Doctor Uhlenbeck spent the summers of 1910 and 1911 with the Blackfoot and has issued to date two collections of texts of that language.³

The work remaining to be done is very considerable and should be participated in by several individuals in order to secure the best and speediest results.

Athapascan. The number of dialects making up the stock generally called Athapascan is unknown. They fall into three geographical groups: Those spoken in a large and continuous area in the northern portion of North America including the drainage of the Mackenzie and Yukon rivers; those spoken along the Pacific coast in Washington, Oregon, and northern California; and those spoken in the Southwest, in Arizona, New Mexico, and Oklahoma. The first words of this stock appear to have been recorded in 1742 on board His Majesty's ship *Furnace* by Edward Thompson, surgeon of the ship. The dialect is that of the "Northern Indians inhabiting the Northwest Coast of Hudson's Bay." The vocabulary is published in *An Account of the Countries adjoining Hudson's Bay*,⁴ by Arthur Dobbs. During the years 1767-1772 Samuel Hearne was traveling in the country of the Athapascans. He

¹ Michelson, (a).

² de Josselin de Jong, (a).

³ Uhlenbeck, (c), (d).

⁴ Dobbs, pp. 206-211.

went from Hudson bay to the Coppermine river and Great Slave lake. Alexander Mackenzie in 1789 followed the river which bears his name to its mouth and in the years 1792-1793 crossed the Rocky mountains and reached the Pacific ocean. His two journeys were almost entirely within the territory of those speaking Athapaskan dialects. Petitot, during several years of residence on the Mackenzie river, published a book of myths and tales which contains a number of excellently recorded texts.¹ He also compiled a large comparative dictionary as an introduction to which he supplied a brief comparative grammar.² Father Legoff, who has resided for many years with the Chipewyan, published in 1889 a grammar of that language. Father Morice acquired the language of the Carriers of British Columbia, and has contributed many articles on the Déné languages, as he prefers to call them. The solid contributions of Father Jetté and the Rev. Chapman have been mentioned above. Dr J. Alden Mason visited the Dog Rib and Slavey on Great Slave lake for the Geological Survey of Canada in 1913 and secured much material as yet unpublished. The writer spent the summer of 1905 with the Sarsi, a few weeks in 1911 with the Chipewyan of Cold lake, and the summer of 1913 with the Beaver. The Chipewyan material has been published in vol. 9 of the *Anthropological Papers* of the American Museum of Natural History, and the Sarsi is in the University of California Press.

The Athapascans of the Pacific coast are known by vocabularies recorded by Gibbs, Powers, and others. The writer, while connected with the University of California, recorded texts of the Hupa, Talowa, Chilula, Whilkut, Nongatl, Lassik, Wailaki, Sinkyone, and Kato. The Hupa, Kato, and Chilula material has appeared in the University of California Publications in American Archaeology and Ethnology.³

The connection of the southern group with the northern Athapascans was first recognized by Turner in 1852.⁴ His conclusions were

¹ Petitot, (c).

² Petitot, (a).

³ Goddard, (a to e).

⁴ Turner, (a).

based on vocabularies by Simpson and others. Dr Washington Matthews worked for many years among the Navaho; he published many words and phrases and texts, particularly of songs.¹ The Franciscan Fathers of St Michaels, Arizona, have acquired the Navaho language and have published a dictionary.² F. G. Mitchell, assisted by Alexander Black, has issued a phrase book with conjugations, etc. The Bible has been translated into Navaho by Mr Mitchell and is now being printed. The writer has spent considerable time with the Jicarilla,³ Mescalero, San Carlos, and Kiowa Apache.

Eskimo. The Eskimo dialects are spoken on both coasts of Greenland and along the Arctic coast of North America from Labrador westward to Copper river, Alaska. There are also Eskimo-speaking tribes in northeastern Asia. The natives of the Aleutian islands speak dialects which are related to those of the Eskimo proper. This long and narrow strip of occupied territory has produced a large number of dialects, each generally varying but slightly from its nearest neighbors. According to Thalbitzer, who has made careful personal studies of three Greenland dialects, the Alaskan dialects are about as different from those of Greenland as are English and German.⁴ With the five Greenland dialects he classes those of Baffin land, Smith sound, and Labrador. The dialects of the Central Eskimo are not well enough known for final classification.

Eskimo were known in northern Europe long before the discovery of America. The natives of Greenland have been under the influence of the missionaries for about two centuries. During this time much of the Bible and a great deal of religious literature has been translated and composed in the dialects of Greenland. The grammars and dictionaries produced by two of these missionaries rank among the foremost contributions from missionary sources to the American languages. Paul Egede published a dictionary in

¹ Matthews, (*b, c, d*).

² Franciscan Fathers, (*a, b*).

³ Goddard, (*f*).

⁴ Bonn, (*r*), p. 972.

1750 and a grammar in 1760. These have formed the foundations of Eskimo linguistic study. S. Kleinschmidt, also a missionary, published a grammar in 1851 and a dictionary in 1871. The orthography of Kleinschmidt has been generally adopted as the standard for Eskimo work. H. Rink, for some years a Government official in Greenland, acquired a considerable acquaintance with the Eskimo of Greenland. He published vocabularies and collected a large body of texts which have unfortunately disappeared. Recently Dr William Thalbitzer, trained in phonetics by Jespersen, has undertaken a study of the Eskimo of Greenland. He has published the first phonetically adequate treatment of any American language, if not of any non-literary language, anywhere.¹ There are in existence numerous vocabularies and minor grammatical discussions of many Eskimo dialects of the continent of North America. We lack as yet carefully recorded texts or grammatical treatises of scientific worth of the western dialects.

Iroquoian. The first words of any American language ever printed, according to Pilling, were Iroquoian. Cartier has a Huron vocabulary in a work published in 1545. The Iroquoian-speaking tribes when first known to Europeans were in three geographical groups. The Huron or Wyandot were north of the St Lawrence river, later about Lake Simcoe, Ontario. The Five Nations (Cayuga, Mohawk, Oneida, Onondaga, and Seneca) were in New York. Adjoining them on the south were the Conestoga and Susquehanna on the Susquehanna river, in Pennsylvania and Maryland; the Tuscarora were in North Carolina and the Cherokee in the southern Alleghenies. The very abundant linguistic literature on the Iroquoian stock prior to 1888 is listed and discussed by Pilling.² This literature, considerable in bulk, is mostly missionary in origin. Sequoya, a mixed-blood Cherokee, about 1820, invented a syllabary based on the Roman alphabet, the sounds of which he did not know. By means of these characters a newspaper and a native literature were printed and the Cherokee became a literary people. Mr J. N. B. Hewitt has been engaged since 1880 in the

¹ Thalbitzer, (a).

² Pilling, (c).

study of the Iroquoian languages. Since 1886 he has been connected with the Bureau of American Ethnology. The Geological Survey of Canada, since undertaking anthropological research in 1910, has devoted considerable attention to the Iroquoian peoples. Mr C. M. Barbeau has devoted himself particularly to Huron. While at present there does not exist in printed form texts or grammar produced primarily for linguistic purposes, it is expected that much material will some time be available. It is important that a group so interesting linguistically should be carefully and efficiently worked.

Muskhogeian. A large number of dialects formerly spoken in the southeastern United States fall together into the Muskhogeian stock. The subdivisions of this stock, according to Doctor Swanton, are as follows:

I. Muskhogeian proper, *a* Southern division: 1, Hitchiti; 2, Apalachee; 3, Yamasi; 4, Alabama (including Koasati); 5, Choctaw (including two dialects of Choctaw and one of Chickasaw); *b* Northern division: 1, Muskogee or Creek.

II. Natchez dialects, of which only Natchez has been recorded. To the same group belonged the Avoyel and Taensa of which there are no records. Of the Choctaw and Muskogee there is abundant missionary literature, including translations of parts of the Bible and grammars and dictionaries to aid in acquiring the language. This literature has been listed by Pilling. Many thousand people still speak these two languages, many of them being able to read and write them as well. The printed material of the other dialects is somewhat scanty. Doctor Gatschet gave considerable attention to the Muskhogeian languages, collecting vocabularies, grammatical material, and a few texts. Some of this material he published in *A Migration Legend of the Creek Indians*.¹ Doctor Swanton has undertaken the Muskhogeian field, having spent many months in field-work since 1907, visiting the remnants speaking dialects likely soon to disappear. He has recorded texts as follows: 250 pages in Natchez, 250 in Alabama, 100 in Koasati, 150 in Hitchiti. Doctor Swanton has collected vocabulary material of his own and has

¹ Gatschet, (8).

worked over the material left by Doctor Gatschet and the published material of Byington on Choctaw, analyzing the language and determining the stems. Doctor Swanton, if uninterrupted, will be able to produce a comparative grammar and dictionary of the Muskogean dialects. When that has been accomplished the question of relationships outside of the now recognized stock can be intelligently and conclusively discussed.

Salishan. The Salish languages are spoken in British Columbia and Washington between the Rocky mountains and the Pacific. The Salish dialects are grouped geographically as follows:

I. Dialects of the interior: Lillooet, Ntlakyapamuk, Shushwap, Okinagan, Flathead, Cœur d'Alène, Columbia group.

II. Coast dialects: Bellaçoola, Comox, Cowichan, Squawmish, Songish, Nisqualli, Twana, Chehalis, Tillamook.

There are many published vocabularies of Salish dialects, notably those of Hale, Gibbs, Tolmie and Dawson, and Boas. Professor Boas has published a grammatical discussion of Bellaçoola. Myron Eells has a note on the Twana language in the *American Antiquarian*. The vocabularies of George Gibbs are in the *Contributions to North American Ethnology*,² and include also a dictionary of Nisqualli. Recently, at the suggestion of Professor Boas, James Teit has made a thorough dialectic survey of the Salish tribes. The results are being published with a map as volume 3 of *Columbia University Contributions to Anthropology*. This exceedingly difficult and important field awaits the attention of some person or persons who will record sufficient text material to furnish a basis for a comparative grammar. From the known variation in both phonetics and morphology, it is certain such work will produce results of great value.

Shoshonean. The languages and dialects generally known as Shoshonean were spoken throughout the greater part of the Great Basin from the Colorado and San Juan rivers on the south nearly to the Canadian boundary on the north. Shoshonean languages are also spoken in western Texas, in the Hopi pueblos of Arizona,

¹ Boas, (a), also in *Science*, vol. 7, p. 218 (1886).

² Gibbs, (b), pp. 247-283.

and in southeastern and southern California. Many vocabularies have been recorded and published. Gallatin has a very short one;¹ Turner has several collected by Whipple.² The most representative vocabularies are included in the *Report upon the United States Geological Survey West of the 100th Meridian*, which received the editorial attention of Gatschet.³ Doctor Kroeber, in connection with other field-work for the American Museum of Natural History in 1903, and in 1904 for the University of California, secured considerable additional material. Most of this was in the form of vocabularies. By means of these vocabularies he has been able to classify the various dialects into definite groups. These are: The Pueblo branch (Hopi); the Plateau branch consisting of Ute-Chemehuevi, Shoshoni-Comanche, and Mono-Paviotso groups; the Kern River branch; and the southern California branch, consisting of Serrano, Gabrieleño, and Luiseño-Cahuilla groups.⁴ Similar material bearing on the dialects of southern California by the same author is in the same series.⁵ Additional material from the Bannock and Shoshoni led Doctor Kroeber to a rediscussion of the groups making up the Shoshonean stock, published with the new material.⁶ The University of California has a grammar and dictionary of the Luiseño dialect by Philip A. Sparkman in manuscript. Some grammatical information concerning this dialect was published by Mr Sparkman.⁷ Doctor Waterman has made a study of the phonetics of the Northern Paiute dialect, which is published with tracings and other illustrations.⁸ At present there are no published texts of Shoshonean languages. Doctor Sapir in 1909 recorded 63 manuscript pages of texts of the Uncompahgre and Uintah Ute dialects. He also secured 277 manuscript pages of texts from a Carlisle student, a Southern Paiute. The Shoshonean

¹ Gallatin, (a), p. 378.

² Turner, (b), pp. 71-77.

³ Gatschet, (g), pp. 424-479.

⁴ Kroeber, (e), pp. 65-105.

⁵ Kroeber, (h), pp. 235-269.

⁶ Kroeber, (i), pp. 266-277.

⁷ Sparkman, pp. 656-662.

⁸ Waterman, pp. 13-44.

languages present special difficulties in phonetics. Someone with an exceptional ear or with mechanical aids should undertake this important field in which so much remains to be done, unless Doctor Sapir's other duties will allow him to continue.

Siouan. Rivaling the Algonkian-speaking peoples in popular interest are the users of the Siouan tongues. As the Algonkian tribes held the great eastern forests, so the Siouan peoples occupied the great buffalo plains. Roughly speaking, they occupied the region between the Mississippi and the Rocky mountains from Canada to the Arkansas river. A second division of Siouan languages was spoken in the southern Appalachian region. In addition to these two large groups are two isolated dialects, the Biloxi on the Gulf coast in Mississippi and the Ofo on the Yazoo river. They may be classified as follows:

- A. Dakota-Assiniboin: (1) Mdewakanton, (2) Wahpekute, (3) Sisseton, (4) Wahpeton, (5) Yankton, (6) Yanktonai, (7) Teton, (8) Assiniboin.
- B. Dhegiha: (1) Omaha, (2) Ponca, (3) Quapaw, (4) Osage, (5) Kansa.
- C. Chiwere: (1) Iowa, (2) Oto, (3) Missouri, (4) Winnebago.
- D. Mandan.
- E. Hidatsa: (1) Hidatsa, (2) Crow.
- F. Biloxi: (1) Biloxi, (2) Ofo.
- G. Eastern: (1) Tutelo, (2) Catawba, and several extinct and problematic dialects.

The main sources of linguistic material are missionary, the works of Riggs and the excellent material brought together by J. Owen Dorsey, who after several years of missionary labor devoted himself to linguistic and ethnological work, chiefly with the Omaha and Ponca. Riggs, besides translating the Bible and much religious literature into Santee Sioux for the use of the Indians, furnished a volume of texts with interlinear translations, a grammar, and dictionary, which remain our chief and most valuable sources of information concerning the Santee.¹ Dr Washington Matthews, while stationed as army surgeon on Ft Berthold reservation, North Dakota, made a thorough study of the Hidatsa, published

¹ Riggs, (a), (b).

by the United States Government in 1877.¹ Mr Dorsey was missionary with the Ponca Indians from 1871 until 1873 when ill health caused him to retire. During this time, however, he acquired a speaking knowledge of Ponca. From the organization of the Bureau of Ethnology in 1879 until his untimely death in 1895 most of his time was given to linguistic work with Siouan tribes.²

Under the direction of Mr Dorsey, George Bushotter, an educated Teton, wrote out 201 texts, in his own dialect. These were deposited in the Bureau and a portion has recently been revised with native help by Doctor Swanton. Doctor Swanton has also edited 31 Biloxi texts and a Biloxi dictionary left by Mr Dorsey.³ In the same publication is included material secured in 1908 by Doctor Swanton from an Ofo woman, the last of her tribe supposed to have been long extinct.

Of the Catawba language we have a grammatical sketch by Doctor Gatschet and some texts by Doctor Speck.⁴

Doctor Frachtenberg secured a few words of Tutelo from an old Tutelo woman.⁵ From a Cayuga Indian Doctor Sapir in 1911 secured a few words of Tutelo which is now extinct.⁶ Still more material, left unpublished by Doctor Dorsey, is in possession of the Bureau of American Ethnology.

Dr Paul Radin has recorded a large amount of text material among the Winnebago, and Dr Robert H. Lowie has taken many texts among the Crow, Hidatsa, and Mandan. Of this material only the Mandan and a few pages of the Crow have been published.

Additional work should be undertaken in the Siouan field until each language is represented by a body of texts. It is particularly important that a careful phonetic survey be made, since the material now on record has been taken down by several individuals.

A grammatical sketch based on Santee and Teton by Boas and Swanton is included in the *Handbook of American Indian Lan-*

¹ Matthews, (a).

² Dorsey, (a), (b), (c).

³ Dorsey and Swanton.

⁴ Gatschet, (e), pp. 527-549; Speck, (e), pp. 319-330.

⁵ Frachtenberg, (d), pp. 477-479.

⁶ Sapir, (g), pp. 295-297.

guages.¹ A comparative grammar of the Siouan languages might be made if some individual would devote himself to the work for a few years. It would be an exceedingly valuable contribution to our knowledge of American linguistics.

CONCLUSION

There remains a great amount of linguistic work to be done. With so little known of the origin of languages, and the conditions controlling their development and their dispersion, it is important that a record should be preserved of every language spoken. In order that that record be adequate, great care must be taken in phonetic representation. The sounds which correspond to the characters employed in writing should be so carefully described as to their manner of articulation and their acoustic effects as to make them thoroughly intelligible for all time.

Sufficient material from each dialect should be recorded in the connected form of texts to furnish a fairly complete lexicon of the words it contains and a representation of the grammatical forms in use.

Ultimately the material of each language should be as fully analyzed as possible that the definite force and meaning of each element may be determined. These should be listed by some alphabetical system in order to make them easily available for comparative purposes. The relationship of these elementary parts to each other in the language itself, when determined and adequately set forth in a grammar, completes the most essential study of the individual language or dialect.

In the case of the larger stocks comparative dictionaries and grammars should be made with a full discussion of the phonetic, lexical, and morphological relationship of the dialects composing them. With such material available, the relationship of the languages of America may be discussed with success and comparison with the languages of other continents profitably made.

¹ Boas, (*r*), pp. 875-965.

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CEREMONIALISM IN NORTH AMERICA

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IN delimiting the range of cultural phenomena to which this paper will be confined, it is impossible to adhere to any of the current definitions of "ceremony" or "ceremonial." A set mode of procedure is characteristic of every phase of primitive behavior, and thus it is justifiable to speak of birth, puberty, death, war ceremonies, etc. An article on "ceremonialism" in this sense would needs center in a discussion of the psychology of routine. When, however, Americanists speak of "ceremonialism," they generally associate with the term a more or less definite content of stereotyped form. Performances such as the Snake Dance of Pueblo peoples, the Sun Dance of the Plains, the Midewiwin of the Woodland area, are examples *par excellence* of what is commonly understood by a "ceremony." These performances are not individual, but collective undertakings; and, even where they hardly fall under the category of "religious observances" or "solemn rites," they are uniformly more than mere attempts at social amusement. As Indian dances are often performed for a serious purpose, or at least form elements of complexes of a serious character, the terms "dance" and "ceremony" are sometimes used interchangeably. This loose usage is as undesirable as the frequent identification of the problem of ceremonialism with that of organizations. There are North American dances performed exclusively as a matter of amusement, and there are organizations corresponding to our clubs rather than to ceremonial bodies. Elements of similarity may necessitate joint consideration of the ceremonial and non-ceremonial dances and societies; but it may be well to state that, in dealing with "ceremonialism," we start primarily from a consideration of solemn collective performances with an avowedly serious purpose, and shall include only such other phenomena as are historically or psychologically related to "ceremonialism" as thus defined.

Having regard to the limitation of space, a descriptive account of

ceremonial activity in North America is out of the question here. I shall therefore merely enumerate the most important ceremonies in the several culture provinces, and shall then select for discussion a number of problems that arise from the consideration of our ceremonial data.

In the Eastern Woodland area, the Midewiwin looms as the most important ceremony of the Algonquian tribes, though its sphere of influence extended to several Siouan peoples, including some inhabiting the Plains. It was the property of a secret society, membership in which was preceded by a formal initiation. A shooting performance, either by way of initiating the novice or merely as a shamanistic practice, forms the most obvious objective bond between the forms of the ceremony as practised by the several tribes; while the interpretation of the aim of the ceremony varies.¹ The Iroquois also had a number of secret ceremonial organizations of as yet little understood character, of which may be mentioned the Little Water Fraternity and the False Face Society; the performances of the latter being characterized by the use of grotesquely carved face-masks. In addition, there was a series of tribal seasonal festivals, ostensibly in the nature of thanksgiving celebrations, held annually at such periods as the first flowing of the maple-sap, the planting and the ripening of the corn, etc. These ceremonies, as well as the seven-days' New Year's Jubilee, correspond in a way to the spectacular composite performances of other areas in which religious practices are combined with entertainments of various forms.²

In the Southeast all other dances were completely overshadowed by the annual several-days' (from four to eight) festival known as the "Busk," and celebrated on the first ripening of the crops. The public making of new fire, the scarification of the men, and the taking of an emetic, are among the noteworthy objective features. The new-fire ceremony, as pointed out by Speck, has analogies not only in the Southwest, but even in Mexico; and the taking of an emetic is shared with some southern Plains tribes and the Pueblo Indians.³

¹ Jones, in *Annual Archaeological Report*, p. 146; Radin 1 (see Bibliography, pp. 629-631); Hoffman.

² Parker and Converse, pp. 74 *et seq.*, 140 *et seq.*; Morgan, pp. 187-222, 263-289.

³ Speck, pp. 112-131.

In the Plains area, ceremonial activity attained a very high degree of development, though this was shared in very unequal measure by the several tribes. The Sun Dance, the great tribal performance of most of the inhabitants of the area, will be discussed below. Other ceremonial performances of wide distribution center in the rites connected with sacred bundles of restricted ownership. The widely diffused medicine-pipe ceremonials, the sacred-bundle rites of the Blackfeet, and the shrine performances of the Hidatsa, may serve as examples. There are mimetic animal dances, those in imitation of the buffalo occurring in varying guise and with varying *raison d'être*, such as the luring of the game. Some of the last-mentioned category of performances are the property of individuals who have experienced a vision of the same supernatural animal. Military and age societies, though in certain tribes wholly or predominantly secular, assume in others a markedly ceremonial aspect.¹

Among the Southwestern Indians, North American ceremonialism attains its high-water mark. There is a profusion of ritualistic externals, — wooden or sand-painted altars, prayer-offerings, masks, sacred effigies, and the like, — and esoteric fraternities perform elaborate ceremonies in order to heal the sick, or for the ostensible purpose of promoting the public welfare by effecting adequate rainfall or insuring success in the chase or war. These performances resemble the Iroquois festivals and the Plains Indian Sun Dance in being composite phenomena in which strictly religious features are blended with games, clownish procedure, and what not. The Hopi and Zuñi ceremonies further recall the Iroquois festivals in being calendric; that is, following one another in fixed sequence at stated seasons of the year.²

On the Northwest coast and its immediate hinterland we find the potlatch festival, involving a generous distribution of property by the host that entails a return distribution of gifts at a high rate of interest. Upon this secular basis there have been engrafted, among the northern tribes of the area, ceremonial concepts derived from the

¹ Dorsey, G. A. 1, 2; Dorsey, J. O.; Fletcher; Fletcher and La Flesche; Kroeber 1, 2; Lowie 1, 2; Wissler 2, 4.

² Fewkes 1, 2; Matthews; Stevenson 1, pp. 16, 69-131; 2, pp. 62-283.

Winter Ritual of the northern Kwakiutl, from whose territory they have likewise extended southward. The Winter Ritual is founded on the novice's acquisition of a supernatural protector, whose character is in a measure predetermined by his family affiliations, or rather restricted by his family's supernatural property rights. During the winter, community of guardian spirits forms the bond of association, superseding family ties, and creating temporarily a number of ritualistic societies. The ritual purports to portray the novice's abduction by the guardian spirits, their return to the village, and their restoration to a normal condition. In reality it is a compound of these elements with potlatch incidents, sleight-of-hand exhibitions, clownish activity, and so forth.¹

Among the Eskimo unaffected by neighboring Indian peoples, ceremonialism apart from shamanistic practices is but slightly developed. The Central Eskimo have an annual festival that purports to effect the home-sending of the deity protecting the sea-mammals, and during which the shaman purges this deity's body by removing the effects of transgressed taboos. The appearance of masked performers impersonating the divinity and other spirits is a noteworthy trait of this ceremony.²

Paucity of ceremonial is a trait shared by the inhabitants of the Mackenzie area, the Plateau region, and California, all of whom present the least highly developed form of North American culture. Professor Kroeber has pointed out that the simpler the stage of culture the more important is the shaman.³ The statement might be extended from shamanistic practices to those practically universal observances connected with such events as birth, puberty, individual acquisition of supernatural power, and death. They, like the shamanistic functions in Kroeber's characterization, tend to become, "relatively to the total mass of thought and action of a people, less and less important." It thus seems possible to consider ceremonialism *par excellence*, as defined above and treated by preference in this article, a relatively recent trait superimposed on a series of simple routine

¹ Boas 2, 3; Swanton 1, 2.

² Boas 1, pp. 583-609; 4, pp. 119 *et seq.*; 489 *et seq.*

³ Kroeber 3, p. 327.

procedures of the type just mentioned. The culture of the Mackenzie River people is relatively little known, but the prominence of shamanism and sleight-of-hand tricks appears clearly from Hearne's and Petitot's accounts;¹ and among the Thompson River Indians the puberty ceremonials loom as a very important cultural feature.² Shamanism with its correlated practices, and puberty rites, are known in other areas, but they are often eclipsed by the doings of esoteric brotherhoods and other spectacular performances. This is merely grazing a significant problem; and it must be clearly understood that, even in the ruder North American cultures, phenomena comparable to the more impressive ceremonials of other regions are not wholly lacking. Thus the Ute and related Shoshoneans celebrate an annual spring festival known as the "Bear Dance;"³ a series of winter dances with ceremonial raiment occurs among the Central Californian Maidu; and other Californian tribes have public annual mourning ceremonies and the semblance of a secret society formed by initiated male tribesmen.⁴ The occurrence of these elements even in the simplest cultures seems to indicate rather clearly that the differences in ceremonial development are not correlated with psychological differences, but rather with differences in the manner of combining and multiplying elements of general distribution. A hint as to the luxurious growth of ceremonialism in certain areas will be found in the section on "Ceremonial Patterns," though why a certain feature extant in a number of regions should become a pattern in one tribe, and fail to become one in others, remains obscure.

Another question, which it is impossible more than to hint at here, relates to the distribution of ceremonial traits less widely diffused than those just dealt with. Thus ceremonial public confession is a trait shared by the Eskimo⁵ with the Iroquois⁶ and the northern Athapascans.⁷ In this case geographical considerations point with overwhelming force to an explanation by historical contact. The

¹ Hearne, pp. 191-194, 214-221; Petitot, pp. 434-436.

² Telt, pp. 311-321.

³ Field information by the writer.

⁴ Kroeber *3*, pp. 334 *et seq.*

⁵ Boas 4, p. 121.

⁶ Morgan, p. 187.

⁷ Petitot, p. 435.

above-mentioned instance of the new-fire ceremony forms perhaps an almost equally good case in point; but in other cases the matter is less certain, though odd features of capricious distribution haunt the mind with visions of possible historical connection. Thus Boas refers to the rather striking analogies between the tortures of the Kwakiutl War Dance and the Plains Indian Sun Dance.¹ The phenomenon of ceremonial buffoonery that crops up among the Iroquois, the western Ojibwa, many of the Plains tribes and Pueblo Indians, as well as in California and on the Northwest coast, presents probably too general a similarity (except among tribes obviously in contact with one another) to be considered of historical significance. Nevertheless some specific analogies are puzzling. Thus the Tlingit have so distinctive an element of Plains Indian clownishness as the use of "backward speech;" that is, expression of the exact opposite of the intended meaning.² Only a much fuller knowledge of the distribution of ceremonial elements and complexes will help us estimate the relative value of the theories of historical contact and independent development in such concrete instances. For the time being, it will be well to regard historical contact as established only in the clearest cases, though these are by no means few (see below, "Diffusion of Ceremonials").

MYTH AND RITUAL

In many cases a ceremony is derived by the natives from a myth accounting for its origin. Native statements, however interesting in themselves, cannot of course be taken as objective historical fact. Hence arises the question, Is the myth the primary phenomenon on which the ceremony is founded, or is it merely a secondary explanation of the origin of a pre-existing ceremony? A considerable amount of information bearing on this problem has been recorded; here only enough can be presented to illustrate essential principles.

The Crows and Blackfeet share a ceremonial planting of Sacred Tobacco. As this performance has not been found among other tribes of this area, and as there are similarities of detail, the single origin of the common features of the ceremonies as performed by the two tribes

¹ Boas 2, pp. 495, 661.

² Swanton 2, p. 440.

is certain. Among the Blackfeet, however, the Sacred Tobacco forms part and parcel of the Beaver Medicine Bundle. This is in its entirety derived from a Beaver, who, after luring away a Blackfoot's wife, indemnified the husband by sending the woman back with the Beaver Bundle.¹ The Crows, on the other hand, do not associate their Tobacco with the beaver, but identify it with the stars. According to the most popular version, the discovery of the Tobacco dates back to the period of their legendary separation from the Hidatsa, when one of two brothers was adopted by the stars, blessed with the vision of the Tobacco, and instructed as to the ceremonial planting. The same ritualistic features are thus associated with two distinct myths in the two tribes; hence at least one of the myths is certainly secondary, which establishes in principle the possibility of such a secondary association. For the secret ceremonials of the Northwest coast of North America, a corresponding conclusion was long ago drawn by Professor Boas. Of the several tribes sharing the ceremonies in question, some derive their performances from the wolves, others from heaven, still others from the cannibal spirit or from a bear. In all cases but one, the explanation *must* be secondary, and, with the possibility of such explanation established, it becomes psychologically justifiable to treat the residual case as falling under the same category: the ritualistic myth is an ætiological myth. Ehrenreich has duly emphasized the occurrence of demonstrably secondary connection between ritual and myth in North America; and, since the rituals and myths of this continent are better known than those of any other area of equal magnitude, he rightly insists that the conclusions derived from this basis have general significance for the problem of the relationship of these associated elements.²

Boas and Ehrenreich not only strengthen the case for secondary connection, but also demonstrate the workings of the ætiological instinct by proving that in not a few cases a ritual is accounted for in a single tribe by attaching it to a folk-tale or folk-tale episode of very wide distribution. In such instances the question of the priority of

¹ Wissler 1, pp. 74 *et seq.*, 78 *et seq.*

² Ehrenreich, p. 84.

the tale or ritual is, of course, immaterial: there is secondary association of previously independent units.

Thus, among the Heiltsuk alone, the story of a woman who gave birth to dogs is used to explain the establishment of the Cannibal Society. As this tale is found without any ceremonial associations among the Eskimo, all the northern Athapascans, and all the Northwest coast Indians, its secondary application to the Heiltsuk ritual is manifest. In other words, not only is the same ritual explained by different myths in different tribes, but, in the attempt to account for the origin of the ritual, there is a tendency to use popular tales that come to hand.¹ This tendency, it may be noted, is strongly developed in other regions of the continent. The Hidatsa and Mandan associated the custom of planting certain offerings by the bank of the Missouri with the tale of the young man who ate of the flesh of a snake, became transformed into a snake, and was carried to the Missouri by his comrade.² According to my own field data, these offerings formed part of the Hidatsa Missouri River ceremony, one of the sacred rituals of the tribe. Similarly, the Bird ceremonial of the same tribe is connected with the exceedingly widespread story of the thunderbird's antagonism to a water-monster. Examples of this type certainly seem to justify in considerable measure Ehrenreich's conclusion: "Jedenfalls liegen der Regel nach einem Kultmythus schon anderweitig bekannte Stoffe oder in anderen Verbindungen vorkommende mythische Elemente zugrunde. Was das Ritual dem hinzufügt, ist äusseres Beiwerk, als Anpassung zu bestimmtem Zweck."

There are many instances, however, where the connection between ritual and myth is of a more intimate nature. The Blackfoot myth of the Beaver Bundle, quoted above, which forms the pattern for a series of other ritualistic myths, may serve as an example. "In most ceremonies," writes Wissler, "the origin of the ritual is regarded as the result of a personal relation between its first owner and its supernatural giver; each ceremony or demonstration of the ritual being a

¹ Boas 2, pp. 662-664; 3, p. 126.

² Maximilian, II, pp. 184-186, 230-234. The tale without ritualistic associations occurs among the Assiniboin, Arapaho, Grosventre, Crow, Omaha, and Arikara. See Lowie 1, p. 181.

reproduction of this formal transfer."¹ This notion is so strongly developed among the Hidatsa that, whenever one of my informants was unable to recount the vision through which knowledge of a particular ceremony was derived, he at once suggested that the ceremony must be of foreign origin. Substantially there is no difference between the origin myths and the accounts by men still living of such visions as explain the institution of recent ceremonies: both recount the meeting with the visitant, his ceremonial gifts, and relevant instructions. The only difference lies in the fact that stories of the first class have already, while those of the second class have not yet, become part of the traditional lore of the tribe, or clan, or society. Again, the secondary character of the myth is at once manifest: no tribe could develop a story explaining ceremonial details (any more than an individual could have a vision of such ritualistic proceedings), unless such ceremonial features already formed part of the tribal consciousness. The myth simply recites the pre-existing ritual, and projects it into the past.

There is, of course, nothing in the nature of human psychology that would prevent myths from being dramatized in ceremony. It is simply an empirical fact that in North America such dramatization, if not wholly absent, is certainly subordinate in importance to the ætiological utilization of the myth. The Midewiwin ceremony does not dramatize the doings of Mānābush and his brother; but the celebrants recite the story and add to it an account of the origin of their own doings. The Omaha Shell Society interpret the ceremonial shooting practised by members as a dramatic representation of the shooting of four children in the Origin Myth; but, as Radin has shown,² the shooting ceremony is so widespread a feature in other tribes, that it cannot have originated from this particular tale. The Okipa performers do not enact their tale of a flood, but use that tale as a partial explanation of their annual festival. A secondary reflex effect of the myth on the ritual and its symbolism is of course undeniable. Thus in the Okipa we do find an actor impersonating the mythic hero Nūmak-máxana; but, while the actor narrates the tale

¹ Wissler 1, p. 13.

² Radin 1, p. 182.

of the flood, he does not, so far as we can judge, perform the actions of his prototype at the time of the flood or on any other occasion. Similarly, among the Hidatsa, the hero-trickster figures in many ceremonial performances; but he does not act out his heroic or clownish exploits.¹ Again, among the Bellacoola, the *kūsiut* ceremonial appears to the native mind as a dramatic representation of legendary happenings. As a matter of fact, we do meet with impersonations of the deities of the Bellacoola pantheon; but the essential elements of the ceremonial, such as the cannibalistic practices, have an origin, not in the highly specialized Bellacoola mythology, but in actual observances shared in recent times by a number of Northwest coast tribes, and connected in part with war customs.

So among the Hopi the episodes of the legends associated with ceremonials do not determine at all definitely the sequence of ceremonial procedure; here also the ritual appears as a less variable and as a pre-existing feature.² Finally may be mentioned the Mohave case. Here the ceremonies not connected with mourning "consist essentially of long series of songs, occupying one or more nights in the recital, which recount, in part directly but more often by allusion, an important myth. At times the myth is actually related in the intervals between the songs. In some cases, dancing by men or women accompanies the singing; but this is never spectacular, and in many cases is entirely lacking."³ But, though the prominence of the myth is here so great that the ceremonies in question are only ceremonial recitations of myths, this very fact obviously precludes dramatization of the mythic incidents.

DIFFUSION OF CEREMONIALS

In the Plains area, the diffusion of ceremonies is in some cases not merely a plausible hypothesis, but an historical fact. No one could doubt that the Hot Dance of the Arikara, Ruptare Mandan, and Hidatsa (involving in each instance the plunging of the performers' arms into scalding hot water), must have been derived from a common

¹ Pepper and Wilson, p. 320; and field-notes by the present writer.

² Fewkes 2, pp. 253 *et seq.*

³ Kroeber 3, p. 340.

source. But we have in addition Maximilian's assurance that the ceremony was obtained by the Hidatsa from the Arikara.¹ Lewis and Clark (1804) mention ceremonial foolhardiness as a feature borrowed by the Dakota from the Crows.² Within the memory of middle-aged men at least, two ceremonies have been introduced into the northern Plains from the south. The peyote cult, which is found among the Tepehuane, Huichol, and Tarahumare of Mexico, flourishes among the Kiowa and Comanche, and has thence traveled northward to the Arapaho, and even to the Winnebago.³ The Grass Dance was introduced among the Crows by the Hidatsa about 1878; among the Blackfeet by the Grosventre, about 1883; among the Flathead by the Piegan, in quite recent times.⁴ It seems to have originated among the Omaha and cognate tribes, including the Ponca, Osage, Iowa, and Oto.⁵ In addition to the tribes already mentioned, its occurrence has been noted among the Pawnee, Dakota, and Assiniboin. Other unexceptionable instances are numerous. Thus a Medicine Pipe Dance of the Pawnee *hako* type was adopted by the Crows from the Hidatsa during the second half of the nineteenth century; and the Hidatsa remember that their Medicine Pipe ceremony was in turn derived from the Arikara. A sacred Horse Dance practised by the River Crows was secured from the Assiniboin. The same division of the Crows adopted a Crazy Dog Society from the Hidatsa about thirty-five years ago. To pass to another area, the Kwakiutl proper ascribe the origin of their cannibalistic ceremonial to the Heiltsuk, from whom they derived the practice in approximately 1835; while the Tsimshian derive a corresponding custom from the same source, whence it reached them probably ten years before.⁶ While native tradition is often untrustworthy, the date set by it in these instances is so recent that scepticism is hardly in place. This is especially true, since linguistic evidence supports the account of the Indians; for practically all the names applied to the Tsimshian performances are derived

¹ Maximilian, II, p. 144.

² Lewis and Clark, I, p. 130.

³ Kroeber 1, p. 320; Handbook; Radin 2.

⁴ Lowie 2, p. 200; Wissler 4, p. 451.

⁵ Fletcher and La Flesche, p. 459.

⁶ Boas 2, p. 664.

from the Kwakiutl, and the characteristic cry of the cannibal is likewise a Kwakiutl word.¹

The foregoing instances, which could be considerably multiplied, illustrate diffusion as an observed or recollected historical phenomenon. Even in the absence of such direct evidence, however, the theory of diffusion is in many cases inevitable. Among the graded ceremonies of the Grosventre, the lowest is a Fly Dance, which is said to have been instituted by a Mosquito; the members imitated mosquitoes, pursuing people and pricking them with spines and claws. The lowest of the graded Blackfeet ceremonies recorded by Maximilian in the early thirties of the nineteenth century was likewise practised by a Mosquito Society, whose members imitated mosquitoes, maltreating their fellow-tribesmen with eagle-claw wristlets.² The coincidence is so complete in this instance, that a common origin is certain, especially since the Blackfeet and Grosventre have been in intimate contact with each other, and since the only other people known to have had a Mosquito ceremony, the Sarsi, have also been closely associated with the Blackfeet. In the case at hand, we are even able to go a step farther, and ascertain not merely the fact, but the direction, of the diffusion process. The Grosventre are linguistically most closely allied with the Arapaho, with whom they once lived, and whose ceremonial system presents striking resemblances to their own. The presence of a Mosquito Dance among the Grosventre constitutes one of the glaring disparities amidst otherwise far-reaching likenesses: we may therefore reasonably infer that the difference resulted from the adoption of the Blackfeet Mosquito Dance by the Grosventre subsequent to their separation from the Arapaho.

In other cases we must be content to infer the mere fact of diffusion from the observed homologies. For example, the Arapaho and Cheyenne have each a Dog organization with four scarf-wearing officers pledged to bravery, and characterized by the same ceremonial regalia, such as dew-claw rattles, feather head-dresses, and eagle-bone whistles. The union of these logically quite unrelated features in adjoining tribes establishes beyond doubt a common origin; but I am not

¹ *Ibid.*, p. 652.

² Lowie 1, p. 82.

acquainted with any specific data that would indicate whether the Arapaho borrowed from the Cheyenne, or *vice versa*. Cases of this type are exceedingly common in every one of the principal culture areas; and where similarities extend beyond the confines of these conventional provinces, or beyond a linguistic stock that more or less coincides with a cultural group, the fact of transmission is emphasized by the type of distribution found. Thus the shooting of a magical object with intent to stun candidates for initiation into the Midewiwin Society occurs among the Central Algonkin. In one form or another, this shooting is also a feature of societies among several Siouan tribes; but these are precisely those tribes which have been in close contact with the Central Algonkin — the eastern Dakota, southern Siouan, and Winnebago. The Sun Dance offers another case in point. This ceremony is found among the majority of Plains tribes, but has also been celebrated by several divisions of the Shoshonean stock, who properly belong, not to the Plains, but to the Plateau area. Here, again, the type of distribution is such as might be expected on the theory of diffusion: of the Shoshoni proper, the Lemhi did not practise the Sun Dance, but it is still performed at Wind River and Fort Hall, where the Shoshoni come more in contact with Plains peoples.

The fact of diffusion must, then, be regarded as established; and the very great extent to which ceremonials have travelled from tribe to tribe, coupled with undoubted diffusion of other cultural elements in North America, indicates that, while the process has been greatly accelerated by improved methods of transportation and other circumstances promoting intertribal intercourse, it must have been active prior to these modern conditions due to white influence.

The next problem is, How have ceremonial features been diffused? Plausible answers to this question seem relatively easy. Ceremonial regalia were often carried in war, and might readily be imitated, or snatched away from the enemy, and thus become a ceremonial feature of a new tribe. Among the Kwakiutl and their cognates, alien dance regalia were often secured by killing the owner.¹ During meetings of friendly tribes, dances were sometimes performed for the entertainment of the visitors, who might thus learn a new ceremony. It was

¹ Boas 2, pp. 424-431.

in this way that the River Crows came to have their Muddy Mouth performance.¹ Wherever a ceremony was considered (as frequently happened) a form of property, the right to perform it was naturally transferable to an alien who paid the customary amount of goods. Thus the Hidatsa secured the Hot Dance from the Arikara by purchase.

Before going further, we must be clear as to what is really transmitted through the agencies suggested. For example, the method of acquiring certain regalia through killing the owner does not account for the diffusion of the ceremony itself which these regalia symbolize. Take an instance cited by Boas. The Matilpe had not been permitted by the other tribes to acquire the Cannibal performer's regalia. At one time their village was approached by a party of men and women from the northern tribes, one of the men wearing the badge of the Cannibal order. Two Matilpe youths killed the strangers, and one of them assumed the Cannibal's cedar-bark ornaments, and at once began to utter the characteristic Cannibal cry, "for now he had the right to use the dance owned by the man whom he had killed." It is clear that the knowledge of the performance preceded the acquisition of the badge. In the native mind, to be sure, the Cannibal Dance was a form of property that could be acquired by killing the owner; and before its acquisition it did not, from the native point of view, form part of the Matilpe culture. But in reality, of course, it did form part of that culture; for otherwise the attitude of the Matilpe, both before and after the murder, would be impossible. The essential problem involved is, not how the Matilpe secured the symbols of the ceremony (however important these may appear to the native mind), but how the Matilpe came to participate in the knowledge of the ceremonial. The murder did not effect simple bodily introduction of a new ceremony, but only bodily introduction of new ceremonial badges, which were fitted into their customary ceremonial associations through prior knowledge of the ceremonial complex to which they belong.

It is, however, quite intelligible how such knowledge spread to the Matilpe through simple attendance as onlookers at performances of other tribes, for in that capacity they were hardly in a different position from the uninitiated spectators who belonged to the tribe of

¹ Lowie 2, pp. 197 et seq.

the performers. Whether an observed ceremonial routine is actually imitated (as in the case of the Muddy Mouth Dance of the River Crows), or remains unexecuted, contingent on fulfilment of requirements due to existing property concepts, is, from the point of view of diffusion, relatively unimportant. The point is, that not only tangible articles, but even an objective series of acts, songs, etc., may readily spread from tribe to tribe. In Australia it has been proved that ceremonies travel in various directions, like articles of exchange, and that frequently "a tribe will learn and sing by rote whole corroborees in a language absolutely remote from its own, and not one word of which the audience or performers can understand the meaning of."¹ Illustrations of similar forms of borrowing are not lacking in North America. Thus the Winnebago chant Sauk songs during their Medicine Dance; and the music of songs is readily passed on from tribe to tribe, as in the case of the Grass Dance.

When there is esoteric ceremonial knowledge, the process of transmission implies, of course, far more intimate contact. Here the borrowing individuals or groups must be treated, for purposes of initiation, as though they belonged to the tribe from which the knowledge is obtained. The Arikara trick of plunging one's arm into scalding hot water without injury could not be imitated by the Hidatsa on the basis of mere observation; instruction must be *bought*, as it would be bought by an Arikara novice from an Arikara adept. Through similarly close personal contact, the Medicine Pipe ceremony spread from individual Arikara to individual Hidatsa, and from individual Hidatsa to individual Crows.

To sum up: transmission of external features, such as ceremonial paraphernalia, is possible on the basis of superficial, possibly even hostile, meetings; friendly intertribal gatherings render possible the borrowing of ceremonial routine, songs, and the like, in short, of the exoteric phases of the complex; while initiation into the inner meaning of a ceremony becomes feasible only through the closest form of personal contact.

Nevertheless the problem of diffusion is still far from being ex-

¹ Roth, *Ethnological Studies among the North-West-Central Queensland Aborigines*, p. 117.

hausted. Even where a ceremony seems to be bodily transferred, it may become different because of the differences in culture between the borrowing and transmitting tribes; that is to say, even an entire ceremony is not an isolated unit within the culture of the tribe performing it, but has definite relations to other ceremonies and to the tribal culture generally. Even tribes sharing in large measure the same mode of life tend to diverge as regards specific conceptions of social and ceremonial procedure. The "same" ceremony may thus enter different associations, and in so far forth become different through its novel relations. There can be no doubt that the Tlingit and Haida potlatches represent a single cultural phenomenon. Nevertheless there is a remarkable disparity between the associations of the great potlatches of these tribes. Among the Haida, the main festival was conducted by a chief in behalf of his own moiety, and was intended only to enhance his social standing. The Tlingit performed a potlatch for the benefit of the complementary moiety and for the sole avowed purpose of showing respect for the dead.¹ This illustration is instructive, because it embodies both types of changes that a transmitted ceremony undergoes, — a change in objective relations, which, however, cannot in many instances fail to affect the subjective attitude of the performers or borrowing tribe at large; and a change of the ostensible object, of the theoretical *raison d'être*, of the performance. These types of changes had best be considered separately. I shall approach the primarily objective alterations undergone by a borrowed ceremony through a consideration of the specific tribal patterns for ceremonial activity; and I shall consider the changes of avowed *raison d'être* in diffused ceremonies in the section dealing in a general way with the ends sought through ceremonial performances.

To avoid misunderstanding, it must be noted that by no means all changes of diffused ceremonies can be brought under these two heads. This is best seen when comparing the established variations in the performance of the same ceremony by local subdivisions of the same tribe. Thus we find that in some Haida towns the Grizzly Bear spirit inspired only women, while in others there was no such restriction.²

¹ Swanton 2, pp. 434 *et seq.*; 3, pp. 155 *et seq.*, 162.

² Swanton 1, p. 171.

The River Crows adopted the Crazy Dog Dance from the Hidatsa without assimilating it to the old Crow dances, while the Mountain Crows at once assimilated it to the rivalry concept of their Fox and Lumpwood organizations.¹ The unique historical conditions upon which such changes of borrowed ceremonies depend are not different in type from those which determine modifications in an indigenous ceremony, and are in neither case amenable to generalized treatment.

CEREMONIAL PATTERNS

Among the Arapaho the seven ceremonies distinctive of the age-societies, as well as the Sun Dance, are performed only as the result of a pledge made to avert danger or death.² The dances of the Kwakiutl, differing in other respects, resemble one another in the turns about the fireplace made by entering dancers; paraphernalia of essentially similar type (head-rings, neck-rings, masks, whistles) figure in Kwakiutl performances otherwise distinct; and the object of apparently every Kwakiutl society's winter ceremonial is "to bring back the youth who is supposed to stay with the supernatural being who is the protector of his society, and then, when he has returned in a state of ecstasy, to exorcise the spirit which possesses him and to restore him from his holy madness."³ Among the Hidatsa the right to each of a considerable number of esoteric rituals must be bought from one's father; in each case the requisite ritualistic articles were supplied by a clansman of the buyer's father; a "singer" conducted the ceremonies; the purchaser received the ceremonial bundle, not directly, but through his wife; and so forth.⁴ All important bundle ceremonies of the Blackfeet require a sweat-lodge performance; in nearly all rituals the songs are sung by sevens; for almost every bundle some vegetable is burned on a special altar; and every ritual consists essentially of a narrative of its origin, one or more songs, the opening of the bundle, and dancing, praying, and singing over its contents.⁵

¹ Lowie 2, p. 148.

² Kroeber 1, pp. 158, 196.

³ Boas 2, pp. 43 *et seq.*

⁴ Writer's field notes.

⁵ Wislizen 2, pp. 257, 271, 254, 101, 251.

It would be manifestly absurd to assume that the notion of performing ceremonies to ward off death originated eight times independently among the Arapaho; that the originators of the Kwakiutl Cannibal ceremonial and the originators of the Kwakiutl Ghost Dance independently conceived the notion of wearing neck-rings;¹ and so forth. Wissler has forcibly brought out the point that among the Blackfeet the Beaver Bundle owners seem to have established a pattern of ceremonial routine that has been copied by the owners of other bundles; and many additional illustrations could be cited to prove that, in every tribe with a highly developed ceremonial system, a corresponding pattern has developed. The psychology of this development has been felicitously compared by Goldenweiser with the process of borrowing ideas from an alien tribe: in both cases a novel idea is suggested, and may be rejected, or partly or wholly assimilated.² Whenever such an idea is generally adopted within a tribe, it tends to assume the character of a norm that determines and restricts subsequent thought and conduct. The Plains Indian generally ascribes any unusual achievement, not to personal merit, but to the blessing of a supernatural visitant; hence he interprets the invention of the phonograph in accordance with this norm. Among the Hidatsa it is customary to give presents to a father's clansman; hence an Hidatsa purchasing admission into an age-society selected from among the group of sellers a member of his father's clan. The notion at the bottom of the norm originates, of course, not as the notion of a norm, but like all other thoughts that arise in individual consciousness; its adoption by other members of the social group is what creates the pattern. We cannot, without tautology, generalize as to the type of concept that will become a model; indeed, we have found that, in two different bands of the same tribe, an already established concept may in the one case assimilate an alien introduction, and in the other capriciously fail to exert any influence on it. All that we can say is, that patterns exist, and are one of the most active forces in shaping specific cultures.

From the point of view here assumed, a problem that might otherwise arise in the study of North American ceremonialism, and has

¹ Boas 2, in which compare figs. 81, 147.

² Goldenweiser, p. 287.

AM. ANTH., N. S., 16—40

already been touched upon, assumes a somewhat different aspect. Finding a very complex ceremonial system in certain parts of the continent, in the absence of such a system in others we might be tempted to ascribe the difference to a psychological difference between the respective tribes. In some measure, to be sure, extensive diffusion of cultural elements in some areas as compared with others would account for the observed phenomenon. If at one time the tribes of the Northwest coast or the Plains, taken singly, possessed a ceremonial culture as simple as that of California or the Plateaus, but spread their respective ceremonials among other tribes of the same area whose ceremonials they in turn adopted, then complexity might ensue without any cause other than conditions favorable for cultural dissemination. On the other hand, the purely internal action of the pattern principle would suffice to produce a corresponding complexity. The Crows have a Tobacco order composed in recent decades of perhaps a dozen or more distinct branches or societies, all sharing the right to plant sacred tobacco, and differing only in the specific regalia, and instructions imparted to the founders in the visions or other experiences from which the branches are derived. Visions of similar type are not lacking among such a tribe as the Shoshoni; but in the absence of an integrating pattern they have not become assimilated to a ceremonial norm. A Crow who belonged to the Tobacco order, and stumbled across a nest of curiously shaped eggs, would form an Egg chapter of the Tobacco order; a Shoshoni might experience precisely the same thrill under like conditions, but the same psychological experience could not possibly result in the same cultural epiphenomenon. The several Tobacco societies of the Crow do not represent so many original ideas, but are merely variations of the same theme. There is, then, only one basic idea that the Crow have and the Shoshoni have not, — the idea of an *organization* exercising certain ceremonial prerogatives, for the ceremonial features in themselves are of a type probably not foreign to any North American group. The complexity of the socio-ceremonial life of the Crows is thus an illusion due to the fact that this single idea became a pattern.

The pattern principle is also of the greatest value in illuminating the precise happenings during the process of diffusion. It has been

shown in another section, that a borrowed ceremony, even when bodily adopted, becomes different, because it originally bore definite relations to other cultural features of the transmitting tribe; and, unless these additional features happen to exist in the borrowing group, the same unit must assume a different cultural fringe. What happens in many, perhaps in the majority of, such cases, is, that the borrowed elements are fitted into conformity with the pattern of the borrowing tribe. Thus the Dog Society of the Crows is traced back to the Hidatsa. But among the Hidatsa this ceremonial body is one of a graded series of military societies in which it occupies a definite position; and entrance into it, as in the case of the rest, is a matter of purchase. Since the Crows neither grade their military organizations nor exact an entrance fee in any of them, the Dog Society naturally lost the impress of the Hidatsa mold so far as these features were concerned. Moreover, it was made over to fit the Crow scheme. Entrance into the society was, as for all other Crow military societies, either a matter of choice, or, more commonly, was stimulated by the desire of members to have the place of a deceased member filled by a relative. Again, while police duties among the Hidatsa were the exclusive right of the Black-mouth Society, the Crow organizations all took turns at exercising this social function, the Dog Society among the rest. Thus the Dog Society with all its ceremonial correlates came to enter quite new combinations and to assume a specifically Crow aspect.¹

To Radin we are indebted for a suggestive investigation of the mechanism of ceremonial borrowing with special reference to the selective and assimilative influences exerted by the recipient culture on the borrowed features. The peyote cult, a very recent importation from Oklahoma, has rapidly risen to a most important position in the life of the Nebraska Winnebago. A detailed study indicates that the only really new thing introduced was the peyote itself, its ceremonial eating, and its effects. Several Christian elements that enter into the present Winnebago performance prove to be similar to pre-existing aboriginal concepts, so as to suggest that their acceptance was due to this conformity. The founder of the Winnebago cult seems to have at once placed the new plant in the category of medicinal herbs, and

¹ Lowie 3, p. 70; 2, p. 155.

accordingly to have associated with it the traditional shamanistic ideas. The organization of the new society automatically conformed to the Winnebago norm. The origin narrative developed by one of the converts "assumed all the characteristics of a Winnebago fasting experience and ritualistic myth, similar to those connected with the founders of the old Winnebago cult societies. In its totality, the atmosphere of the peyote cult became thus highly charged with the old Winnebago background."¹

THE OBJECT OF CEREMONIES

Speaking of the Mandan Okipa, Catlin recognizes three "distinct and ostensible objects for which it was held:" it was an annual commemoration of the subsidence of the deluge; it was an occasion for the performance of the Bull Dance, which caused the coming of buffalo herds; and it was conducted in order to inure young men to physical hardship, and enable the spectators to judge of their hardihood.² The diversity of these alleged objects suffices of itself to suggest that the Okipa is a *complex* performance; that it would be vain to try to account for its origin by a simple psychological explanation. It is *a priori* psychologically conceivable that the Okipa (that is, an annual four-days' summer festival) originated as a celebration commemorative of the mythical flood, however improbable this may appear from our considerations of "Myth and Ritual;" but, if so, the conception that it was intended to attract the buffalo and the conception that it was an ordeal for the young men were secondary. Or we may assume that the ordeal concept was primary; then the two other alleged functions were secondary. And a corresponding conclusion seems inevitable if we suppose that the enticing of the buffalo was the original motive for the festival. In a more acceptable form, this theory might be stated as assuming that three originally independent ceremonies performed for diverse ends somehow became welded together into what then became the Okipa.

Before going further, it will be well to demonstrate that the complexity of the ceremony is an historical fact. This becomes at once

¹ Rudin 2.

² Catlin, p. 9.

obvious when we consider the distribution of two of our three hypothetical elements. The buffalo-calling ceremony is by no means a peculiarity of the Mandan Okipa, but a ceremony very widely diffused over the Plains area: indeed, a buffalo-calling ceremony not differing in principle from that of the Okipa was performed by the Mandan themselves independently of the Okipa;¹ and a ceremony undertaken for the same ostensible purpose and with corresponding mimetic features was practised by the Mandan White Buffalo Cow Society.² What is true of the buffalo-calling feature applies with even greater force to the voluntary self-torture element. This appears with all its characteristic details — such as piercing of the breasts, insertion of skewers, suspension from a pole, and dragging of buffalo-skulls — not only in the Sun Dance of various tribes (where there is a collective torture strictly comparable to that of the Okipa), but also among the Dakota, Crows, and other Plains peoples, as a fairly normal procedure in the individual quest for supernatural aid.³ That the buffalo-calling ceremony and the specific self-torturing practices under discussion were at one time independent of each other, and of whatever other features they are combined with in the Okipa, must be considered an established fact: indeed, the complexity is greater than the theory here discussed would indicate. To mention but one conspicuous feature, a great deal of time is consumed in the Okipa with dances by mummers impersonating animals and closely mimicking their appearance and actions. The performances are objectively, in a rough way, comparable to the Bull Dance, but have nothing to do with any solicitude for the food supply, since many of the beings represented are not game animals. These animal dances rather suggest the dream-cult celebrations of the Dakota, especially as the performers chanted sacred songs distinctive of their parts, and taught only on initiation and payment of heavy fees.⁴ The mimetic animal dance thus forms an additional element of the Okipa complex.

The complex character of the ceremony is thus an historical fact.

¹ Maximilian, II, pp. 181, 264 *et seq.*

² Lowie 2, pp. 346-354.

³ Dorsey, J. O., pp. 436 *et seq.*

⁴ Catlin, pp. 19 *et seq.*; Maximilian, II, p. 178.

How, then, shall we interpret the equally certain fact, that, to the native consciousness, it appeared as a unified performance instituted by the mythical hero Númak-máxana,¹ and celebrated, if not for the specific reasons assigned by Catlin, from the vaguer motive of promoting the tribal welfare in general?²

We shall not go far wrong in putting the alleged *raison d'être* of the Okipa in the same psychological category with ritualistic myths. As the myth is an ætiological afterthought associated with a pre-existing rite, so the alleged object of a complex ceremony may be merely an afterthought engrafted on a pre-existing aggregation of ceremonial elements. In the one case it is the ætiological, in the other the teleological, feature that welds together disparate units, and creates the illusion of a synthetized articulated whole. If the hero Númak-máxana ordered the Mandan to practise a particular combination of un-unified observances, these performances become unified by that mythical fiat; and the causal requirements of the native, at the stage when rationalization sets in, are satisfied. At this stage the teleological point of view naturally serves the same purpose: in practice, in fact, it largely coincides with the ætiological attitude. If Númak-máxana instituted the annual festival, he did so for the purpose of benefiting the Mandan, and dereliction would spell tribal disaster. On the other hand, if the ceremony insures the commonweal, no further cause for its performance is required.

The principle here illustrated by the Okipa may be demonstrated in even more satisfactory fashion for the Sun Dance of the Plains tribes. Whatever may be the avowed purpose of this performance, certain elements are practically uniform throughout the area; for example, the selection and felling of a tree treated as an enemy, the erection of a preparatory and a main lodge, and a several-days' fast culminating (except among the Kiowa) in torture proceedings of the Okipa type. The Sun Dance of the Crows was performed exclusively in order to secure vengeance for the slaying of a tribesman; among the western Algonquian tribes it was vowed in the hope of delivering the pledger or his family from sickness or danger; while benefits of a vaguer and

¹ Maximilian, II, p. 172.

² Curtis, V, p. 26.

more public character were expected by the western Dakota, Hidatsa, and Kiowa.¹ In view of this diversity of ends sought, we cannot associate the ceremonial routine defined above with *any* of the ostensible objects of the Sun Dance; for in all cases but one the object *must* be secondary, and, from an argument analogous to that used in the consideration of "Myth and Ritual," the residual case appears amenable to the same psychological interpretation. In other words, the ostensible motive of complex ceremonies is not the genuine or original motive, but embodies merely the present native *theory* of the reason for the performance.

Several questions naturally arise: If we cannot directly interpret a complex ceremony, can we not at least give a psychological interpretation of its components? further, if we can resolve it into such constituents, how must we conceive the process by which originally unrelated elements became joined together (as we have assumed) through historical accident, to be integrated only at a later stage by some rationalistic synthesis? and, finally, if the native theory is merely an interesting speculative misinterpretation of native psychology, what is the present psychological correlate of those complicated series of observances under discussion?

Let us consider first of all the second question. Analysis resolves a ceremony into a number of disparate elements; how did these ever become joined together? We are here confronted by the problem of secondary association, a large topic to which only a few words can be devoted in this article. In the first place, we should beware of confounding logical with historical analysis. Two features may be not only logically as distinct as musical pitch and timbre, but also as inseparable in reality. This principle has already been expressed by Dr Radin, though his illustration rather shows how apparently unrelated concepts are nevertheless logically related in the native mind. The notion of a society derived from a water-spirit and the notion of curing disease are apparently distinct; but, if the water-spirit is always associated with the granting of medical knowledge, a vision of the water-spirit and the acquisition of medical skill coincide. Thus,

¹ Dorsey, G. A., 1, pp. 5 *et seq.*; 2, p. 58; McClintock, p. 170; Kroeber 2, p. 251; Scott, p. 347; Dorsey, J. O., p. 451.

whatever may be the development of the conception entertained regarding the water-spirit, the association between the idea of a society based on a supernatural communication by that spirit and the idea of doctoring is primary.¹ Here the initial disparity of the elements found in combination proves to be apparent, being merely due to our ignorance of the *tertium quid*. A primary ceremonial² association of genuinely distinct and ceremonially indifferent objects may be achieved through their juxtaposition in a vision, as illustrated by many medicine bundles. Thus, a jackrabbit-skin and a bunch of eagle-feathers may together form an ultimate unit of ceremonial stock-in-trade.

Let us now turn to cases of association of elements once existing apart. One cause of secondary association has already been touched upon. Wherever a particular ceremonial concept becomes the predominant one, it tends to assimilate all sorts of other concepts originally independent of it: thus, in the Crow example of the Tobacco societies and in the case of the Blackfeet Beaver Bundle, which has not only become the pattern for other bundles, but has even absorbed such rituals as the Sun Dance and Tobacco ceremony.³ Among the Crows, individual visions by members of the Tobacco order have led to the association of quite heterogeneous features. A Tobacco member who chanced upon curiously-shaped eggs would found an Egg chapter of the order, and initiate new members into it, thus bringing about a connection between egg medicine and the sacred Tobacco; and in corresponding fashion have developed the Weasel, Otter, Strawberry, and other divisions.

In these cases it would seem that the notion of sacredness or ceremonialism is so strongly associated with a particular content that has become the ceremonial pattern, that any new experience of corresponding character is not merely brought under the same category as the pattern, but becomes an illustration, an adjunct of the pattern concept. In many other instances, a ceremony may bring about conditions normally associated with certain activities in no way connected

¹ Railin 1, pp. 193, 196. The point seems to me to be closely related to that repeatedly made by Lévy-Bruhl in his *Les Fonctions mentales dans les sociétés inférieures*, with reference to "participation."

² Otherwise, of course, the association is secondary.

³ Wissler 2, p. 220.

with the ceremony itself; and, when these conditions arise in the course of the ceremony, they act as a cue to the performance of the normally associated activities. There is no connection between initiation into a society privileged to plant tobacco for the tribal welfare and the recounting of an individual's war-record; nevertheless, in the Crow Tobacco adoption, the entrance into the adoption lodge is uniformly followed by such a recital. The reason is fairly clear. At every festive gathering of the Crows there is a recital of war-deeds; the Tobacco initiation produces such a gathering, which elicits the customary concomitant; and thus the coup-recital becomes a feature of the Tobacco adoption ceremony. Similarly, every Iroquois festival seems to have been preceded by a general confession of sins.¹ Still another way by which heterogeneous ceremonial activities or features become associated is, of course, by purchase. The Hidatsa Stone-Hammer Society, according to Maximilian, bought the Hot Dance from the Arikara. But the Stone-Hammers had a ceremony of their own prior to the purchase, which was thus associated with the newly acquired fire-dance and the plunging of arms into hot water.

These few suggestions must suffice to indicate how disparate elements may become secondarily associated.

So far as the interpretation of the single elements is concerned, there is relatively little difficulty. Though we may not be able to comprehend the ultimate origin of a certain mode of ceremonial behavior, we can generally apperceive it as typical of a certain tribe or a certain group of tribes. The fact that the Plains Indians went to fast in a lonely place, looking for a supernatural revelation, may remain an irreducible datum; but, when we disengage from the Crow Sun Dance complex the attempt to secure a vision that is given as its ultimate motive, we at once bring it under the familiar heading of "vision-quest." So we may not know how "four" came to be the mystic number of many tribes; but it is intelligible that, where it is the mystic number, dances, songs, processions, and what not, should figure in sets of four. Prayers, dances, sleight-of-hand performances, the practice of sympathetic or imitative magic, etc., are likewise ultimate facts; but

¹ Morgan, p. 187.

their special forms in ceremonies of which they are part are readily classified with corresponding psychological manifestations.

But the social setting of the cultural elements enumerated during a ceremony cannot fail to lend them a color they otherwise lack. The pledger of the Crow Sun Dance, who sets in motion the tremendous machinery required for the communal undertaking, and is thenceforth subjected to tribal scrutiny, cannot be supposed to be in the same psychological condition as if he were merely seeking a vision in the seclusion of a four-nights' vigil on a mountain-top. What we find in any complex performance of this type, then, is a number of distinct acts with distinct psychological correlates, integrated, not by any rational bond, but by the ceremonial atmosphere that colors them all.

From this point of view the question, What may be the object or psychological foundation of a ceremony? becomes meaningless. The psychological attitude is not uniform for the performers of a ceremony: it is not the same for the Sun Dance pledger (who wishes to compass an enemy's death) and the self-torturing vision-seekers in quest of martial glory. Much less is it the same for the pledger and the self-advertising reciters and enactors of war-exploits or the philandering couples hauling the lodge-poles. But is not the attitude of the pledger the essential thing? To assume this customary view is the surest way to miss the nature of ceremonialism. A Crow Sun Dance pledger wishes to effect the death of an enemy; a Cheyenne Sun Dance pledger wishes to insure the recovery of a sick relative. Why must both have, say, a dramatic onslaught on a tree symbolizing an enemy? From the rationalistic point of view here criticized, the answer is not obvious. It would be in perfect accord with the Plains Indian mode of action for the Crow and Cheyenne simply to retire into solitude and secure a vision bringing about the desired result. If they are not content with this, and require an elaborate ceremonial procedure, that procedure must have an additional *raison d'être*. The absence of intelligible object (from the *native* rationalistic point of view no less than from our own) in a ceremonial feature becomes at once clear, if we regard its very performance as self-sufficient, as gratifying certain specific non-utilitarian demands of the community. View it not as primitive religion, or as a primitive attempt to coerce the forces

of nature, but as a free show, and the mystification ceases: ceremonialism is recognized as existing for ceremonialism's sake.

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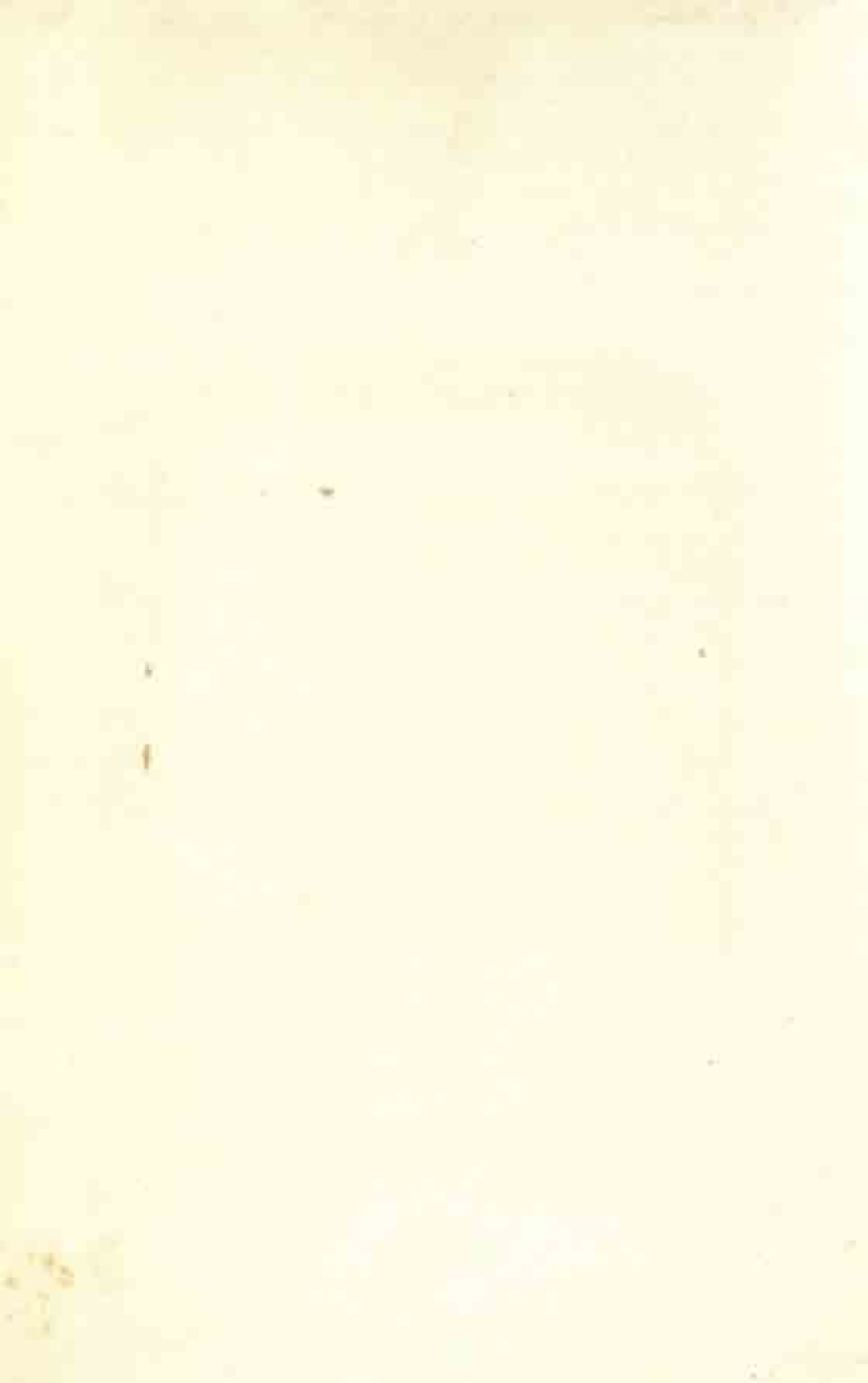
AMERICAN MUSEUM OF NATURAL HISTORY
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INDEX TO AUTHORS AND TITLES

- ACANCEH, Maya zodiac of, 88
- ALGONQUIAN LANGUAGES, alleged, in California, 361
- AMERICAN ANTHROPOLOGICAL ASSOCIATION, officers and members, 150
- AMERICAN MUSEUM OF NATURAL HISTORY, bequest to, 371
- ANTHROPOLOGICAL SOCIETY OF WASHINGTON, Proceedings, 110
- ANTHROPOLOGY, American, facts and problems of, 375, 507
— See PHYSICAL ANTHROPOLOGY
- AREAS of American culture characterization, 413
- ARIZONA. See HANO
- ARROW-CHIPPING with fire and water, 139
- BABYLONIA, ancient, boomerang in, 26
- BANDELIER, A. F. A., death of, 148
— obituary, 337
- BARBEAU, C. M. Supernatural beings of the Huron and Wyandot, 288
- BERTILLOU, ALPHONSE, death of, 147
- BINGHAM, HIRAM. Ruins of Espiritu Pampa, Peru, 185
- BOOMERANG in ancient Babylonian, 26
- CABOKIA MOUND ASSOCIATION, 146
- CALIFORNIA, alleged Algonquian languages of, 361
- CAVE, paleolithic, in the Dordogne, 157
- CEREMONIALISM in North America, 602
- CHAFFANJON, JEAN, death of, 373
- CHAMBERLAIN, A. F., obituary, 337
- CHEYENNE medicine lodge, 245
- COLLAR, stone, from Porto Rico, 319
- COLORADO, circular kivas in San Juan watershed, 33
- CORNPLANTER MEDAL awarded, 144
- CREE PLAINS, notes on, 68
- CULTURAL POSITION of the Plains Ojibway, 314
- CULTURE characterization, American, areas of, 413
— plains, influence of horse on, 1
— See MATERIAL CULTURES
- CEAPLICKA, MARY A., expedition under, 373
- DIXON, ROLAND B. See SWANTON, J. R., and DIXON
- DORDOGNE, paleolithic cave in the, 157
- DUNBAR, JOHN B., death of, 142
- EHRENREICH, PAUL, death of, 374
- ELLIOTT, MARGARET, death of, 145
- EMMONS, G. T. Portraiture among North Pacific Coast tribes, 59
- ESPIRITU PAMPA, ruins of, 185
- EVANS, Sir ARTHUR, gift by, 373
- FACTS and problems of North American anthropology, 375, 507
- FEWKES, J. W. Prehistoric objects from a shell-heap at Erin Bay, Trinidad, 200. Prehistoric stone collar from Porto Rico, 319
- FIRE, arrow-chipping with, 140
- FORTIER, ALCÈS, death of, 373
- FRANCE. See DORDOGNE; LA QUINA
- FRASER FUND for social anthropology, 145
- FREIRE-MARRECO, BARBARA. Tewa kinship terms from Hano, Arizona, 269
- GILBERTSON, A. N. Obituary of A. F. Chamberlain, 337
- GODDARD, P. E. Present condition of our knowledge of North American languages, 555
- GOLDENWEISER, A. A. Mother-in-law taboo, 139
- GRINNELL, GEORGE BIRD. The Cheyenne medicine lodge, 245
- HACAR, STANSBURY. Maya zodiac of Acanceh, 88

- HANO, Tewa kinship terms from, 269
 HISTORY, primitive American, 376
 HODGE, F. W. Obituary of A. F. A. Randell, 349. Wyoming Historical and Geological Society, 141
 HOLDEN, E. S., death of, 147
 HOLMES, W. H. Areas of American culture characterization tentatively outlined as an aid to the study of antiquities, 413
 HOOTON, E. A. Note on the La Quina skull, 267
 HORSE, influence of, on plains culture, 1
 HRDLIČKA, A. Physical anthropology in America, 508
 HUCKERBY, THOMAS. Petroglyphs of St Vincent, 238
 HURON, supernatural beings of the, 288
 INDIANS, North American, material cultures of, 447
 — See under the tribal names
 INFLUENCE of horse on plains culture, 1
 INTERNATIONAL CONGRESS OF AMERICANISTS, 367, 374
 JENKS, A. E. A piebald family of white Americans, 221
 JESUP REQUEST to American Museum, 371
 KINSHIP TERMS, Oglala, 96
 — Tewa, 269
 KIVAS in San Juan watershed, 33
 LA COMBE, a paleolithic cave in the Dordogne, 157
 LANGUAGES, alleged Algonquian, of California, 361
 — North American, knowledge of, 555
 LA QUINA, ten days with Dr Henri Martin at, 257
 LODGE. See MEDICINE LODGE
 LODGE SITES on the Missouri, 135
 LOWIE, R. H. Ceremonialism in North America, 602
 MACCURDY, G. G. La Combe, a paleolithic cave in the Dordogne, 157. Lectures by, 146. The Man of Piltdown, 331
 MAINE, Red-paint people of, 137, 358
 MARTIN, HENRI, at La Quina, 257
 MATERIAL CULTURES of the North American Indians, 447
 MAYA ZODIAC of Acanceh, 88
 MEDICINE LODGE, Cheyenne, 245
 MICHELSON, TRUMAN. Two alleged Algonquian languages of California, 361
 MISSOURI RIVER, lodge sites on, 135
 MOORE, C. B. The Red-paint people of Maine, 137
 MOOREHEAD, W. K. The Red-paint people, 358
 MORICE, A. G., honors to, 372
 MORLEY, S. G., activities of, 372
 MOTHER-IN-LAW, taboo of, 139
 NEBRASKA, ancient lodge sites in, 135
 NIES, JAMES B. Boomerang in ancient Babylonia, 1
 NORTH PACIFIC COAST, portraiture among tribes of, 59
 OGLALA kinship terms, 96
 OJIBWAY, cultural position of the, 314
 PALEOLITHIC CAVE in the Dordogne, 157
 PEABODY, CHARLES. Ten days with Dr Henri Martin at La Quina, 257
 PEABODY MUSEUM activities, 369
 PEET, STEPHEN D., death of, 374
 PERU, ruins of Espíritu Pampa, 185
 PETROGLYPHS of St Vincent, 238
 PHYSICAL ANTHROPOLOGY in America, 508
 PIEBALD FAMILY of white Americans, 221
 PILTDOWN, man of, 331
 PLAINS CULTURE, influence of horse on, 1
 PLAINS-CREE, notes on, 68
 PLAINS OJIBWAY, cultural position of, 314
 PORTO RICO research, 371
 — stone collar from, 319
 PORTRAITURE among North Pacific Coast tribes, 59
 PREHISTORIC objects from Trinidad, 309
 — stone collar from Porto Rico, 319
 PRIMITIVE American history, 376
 PRUDEN, T. MITCHELL. Circular kivas of ruins in San Juan watershed, 33

- RED-PAINT PEOPLE of Maine, 137, 358
RUINS, circular kivas of, in San Juan watershed, 33
— of Espiritu Pampa, Peru, 185
SAINT VINCENT, petroglyphs of, 238
SAN JUAN WATERSHED, kivas in, 33
SHELL-HEAP, objects from, in Trinidad, 200
SKINNER, ALANSON. Notes on the Plains Cree, 68. Cultural position of the Plains Ojibway, 314
SKULL, La Quina, 267
— Pittdown, 331
STERN, F. H. Ancient lodge sites in Nebraska, 135
SUPERNATURAL BEINGS of the Huron and Wyandot, 288
SWANTON, JOHN R., and ROLAND B. DIXON. Primitive American history, 376
TABOO, mother-in-law, 139
TEWA kinship terms from Hano, 269
TRINIDAD, prehistoric objects from, 200
UNIVERSITY OF PENNSYLVANIA MUSEUM expedition, 370
WALKER, JAMES R. Oglala kinship terms, 96
WEST INDIES. See PORTO RICO; SAINT VINCENT; TRINIDAD
WILSON, JAMES GRANT, death of, 143
WISSLER, CLARE. Influence of the horse on Plains culture. I. Material cultures of the North American Indians 447
WYANDOT, supernatural beings of the, 288
WYOMING HISTORICAL AND GEOLOGICAL SOCIETY, 141
ZODIAC, Maya, of Acanceh, 88



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